

Vapour

The official E-Newsletter of the
Indian Society of Anaesthesiologists



Theme: Anaesthesiologist: A multidimensional clinician

HIGHLIGHTS

ACADEMICS: SPOTLIGHT: Theme- Anaesthesiologist: A multidimensional clinician

Dr. Ankur Khandelwal, Dr. Bhavna Gupta, Dr. Madhuri Kurdi,
Dr. Mausumi Niyogi, Dr. Meenu Chadha, Dr. Neeru Sahni, Dr. Parna Thakkar,
Dr. Parul Jindal, Dr. Praveen Ranganatha, Dr. Raksha Kundal, Dr. Swati Jindal

ISA ACTIVITIES

WORLD ENVIRONMENT DAY - ISA NATIONAL ESSAY CONTEST- PRIZE-WINNING ESSAYS

'Yuva' articles

ART & LITERARY PAGES

Kaleidoscope: Interview with
Dr. Madhubala Chinchalkar

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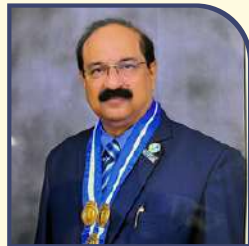
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 3. Enclose two (2) passport size photographs.
 4. Certified xerox copy of Date of birth certificate / PAN card / Passport may be produced as proof of age.

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EDITOR'S NOTE



Dear esteemed members,

Warm greetings from Indian Society of Anaesthesiologists (ISA)

National Headquarters!

The last three months have been super-hectic for the ISA and here we are with the April-May issue of VAPOUR based on the theme 'Anaesthesiologist: A multidimensional clinician'. Most of us don several professional roles everyday and are scantily aware of these complex roles that we play in society at large. We are probably the only doctors who multitask in clinical practice and are yet never really appreciated for it. We are there in the preanaesthesia clinic diagnosing comorbidities and trying to optimise them; in the operation theatres to provide anaesthesia; taking utmost care of the anaesthetised patients and supporting them in all aspects, be it their vital parameters or their emotions. We manage the patient's pain in the postoperative ward. We care for the critically ill patient in the intensive care units. We provide procedural sedation for therapeutic and diagnostic procedures. As pain and palliative care physicians, we manage chronic pain and cancer pain. We preach the gospel of cardiopulmonary resuscitation and are experts in providing trauma care, basic, and advanced cardiac life support. The multidimensional role of us anaesthesiologists is borne of our creative and tough nature, quick decision-making abilities and ability to easily adapt to crisis. We are motherly with the patient in the perioperative period, tolerant with the most impatient surgeon and show our tough yet fatherly instincts when crisis strikes in the operation theatre. Our communication skills help keep the perioperative team members united.

Nevertheless, no clinical speciality is as multidimensional as Anaesthesiology. Nowadays, the dimensions are expanding and the responsibilities of the anaesthesiologist are steadily increasing. Our multidimensional roles were given impetus during the coronavirus pandemic when we assumed the roles of oxygen support and ventilation dons and administrators involved in making hospital protocols and guidelines. The anaesthesiologist in this day and age is an innovator, technological expert, perioperative physician, disaster management expert, educator and a leader in the health care system including regulatory and accreditation bodies. Sleep Medicine is yet another field wherein the anaesthesiologists can apply their knowledge. This newsletter brings to you interesting articles on the innumerus clinical roles of the modern anaesthesiologist. I congratulate the authors and my editorial team members for their efforts in bringing this theme to the fore.

The modern anaesthesiologists in their various roles think not only of themselves but also of the environment and are strong crusaders against environmental pollution. The growth of total intravenous anaesthesia speaks volumes about this. The recent celebration of World Environment Day by the ISA National and several branches of the ISA lays testament to our commitment towards environmental preservation. The views of our anaesthesiologists in this regard are brilliantly depicted in the several essays written by our members on the eve of the National Essay Contest organised by ISA National. The prize-winning essays have been published in this issue of VAPOUR.

The world is full of varied opportunities to serve people and reduce their suffering and the anaesthesiologist is perhaps the only clinician who identifies these opportunities and makes use of them. It is said that Lord Krishna had a multi-dimensional nature('avataars'), but He never claimed it. Lord Krishna Himself is the eighth 'avataar' of Lord Vishnu who Himself had ten 'avataars'. Lord Shiva too had many 'avataars'. The Gods descended in these 'avataars' with some definite purpose. Similarly, we anaesthesiologists are multifaceted physicians doing yeoman service to the society. Let us have faith in ourselves and our capabilities, pat ourselves on the back and continue to do good to mankind. As Honorary Secretary of our esteemed organisation, the ISA, it is with confidence that I say the ISA stands strong to support all its multidimensional members through thick and thin. Happy reading! Thank you and I hope we meet again with the June 2024 issue of 'VAPOUR'. Long live ISA!

Dr Sukhminder Jit Singh Bajwa
Honorary Secretary, ISA National
Editor-in-Chief

'VAPOUR'

(The official newsletter of the ISA National)



Indian Society Of Anaesthesiologists
Family Benevolent Fund



ISA NOTICE BOARD

CONFERENCE & CME CALENDER OF ISA (2024)

Conference/CME (Coming up)	Location	Organised by	Dates
ISACON TELANGANA	SVS Medical College, Mahabubnagar	ISA Mahabubnagar city branch & SVS Medical College, Mahabubnagar	5th to 7th July 2024
ISA National Sponsored CME with Workshop	Jhunjhunu, Rajasthan	ISA Jhunjhunu branch	13th, 14th July 2024
39th ISA Annual South Zone conference & 46th annual Tamilnadu State Conference	Yercaud, Salem	ISA Salem City branch	18th to 21st July 2024
ISA National sponsored Workshops (Advanced airway,USG guided regional anaesthesia,Segmental spinal)	Ahmedabad	ISA Ahmedabad City Branch	21st July 2024
3rd Yuva ISACON & 13th UK ISACON	HIMS, SRHU, Dehradun	Department of Anaesthesia. HIMS, SRHU, Dehradun	1st to 3rd August 2024
ISACON KARNATAKA 2024	JN Tata Auditorium Complex, Malleshwaram, Bengaluru	ISA Bangalore Metro branch & Department of Anaesthesiology, BMCRI, Bangalore	8th to 11th August 2024
ISACON West Bengal	Novotel Hotel, Kolkata	ISA West Bengal state & Apollo Hospitals, Kolkata	30th August to 1 st September 2024
ISA National Sponsored CME with Workshop	Barabanki, Uttar Pradesh	ISA Barabanki branch	31st August, 1st September 2024
RAJISACON 2024	Jodhpur	Dr. SN Medical College, Jodhpur & ISA Jodhpur city branch	13th to 15th September 2024
ISACON ODISHA	VIMSAR, Burla	ISA Sambalpur city branch & VIMSAR, Burla	14th , 15th September 2024
ISACON North zone 2024	Jammu	Govt. Medical College, Jammu, Jammu & Kashmir (UT)	20th to 22nd September 2024
ISACON AP 2024	Tirupati	ISA Tirupati	27th to 29th September 2024
ISACON Puducherry	JIPMER, Puducherry	ISA Puducherry & Department of Anaesthesia & Critical Care, JIPMER, Puducherry	27th to 29th September 2024

Conference/CME (Coming up)	Location	Organised by	Dates
ISACON Delhi 2024	Hyatt Centric Janakpuri, New Delhi	ISA Delhi branch	27th to 29th September 2024
ISACON GUJARAT 2024	The Deltin, Daman	ISA Gujarat state branch	28th to 29th September 2024
UPCZ ISACON 2024	Jhansi, Uttar Pradesh	MLB Medical College, Jhansi & ISA Jhansi city branch	25th to 27th October 2024
71st ISACON 2024 (National Conference of ISA)	Samrat Ashok Convention Center, Patna	Patna Society of Anaesthesiologists (PSA)	20th to 24th November 2024

Note: The dates mentioned in the above table are tentative & as per information received.
The list of upcoming conferences will be updated in subsequent issues.

ISA National PG online classes

These are being conducted regularly every Monday between 6.30 to 8pm. Experienced PG teachers are taking PG oriented classes including exam-oriented topics.

Indian Journal of Anaesthesia
The ISA-IJA REAP academic webinar series (fortnightly), every Thursday between 5pm to 6pm is being conducted.

ISA academic webinar series
The ISA conducts Clinical Practice oriented webinar series (CLIP) and Clinical Reasoning and Problem Solving webinar series (CRISP) on Thursdays between 6.30pm to 8.30pm.

Empowering Anaesthesiologists in Health System Management

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Anaesthesiologists, traditionally viewed as the guardians of the operating room, have evolved into pivotal figures in the broader health system. Beyond their expertise in anaesthesia and perioperative care including pain management, critical care, and emergency medicine, their multitasking abilities, communication skills, adaptability to changing circumstances, multidisciplinary collaboration, and systems-level thinking uniquely position them to assume leadership roles within health systems. Their ability to manage complex medical situations and their holistic view of patient care make them valuable assets in health system leadership. Anaesthesiologists collaborate and interact not only with physicians of virtually every speciality, but also with stakeholders in nursing, pharmacy, accreditation, risk management, biomedical engineering, and operations, to name a few. They are increasingly involved in hospital administration, quality improvement initiatives, policy making, resource allocation, and the development of evidence-based clinical protocols. Their understanding of the intricate balance between cost and care quality allows them to make informed decisions that optimise the use of resources without compromising patient care. This balance is crucial in today's healthcare landscape, where administrators must navigate financial constraints while striving to maintain high standards of care.

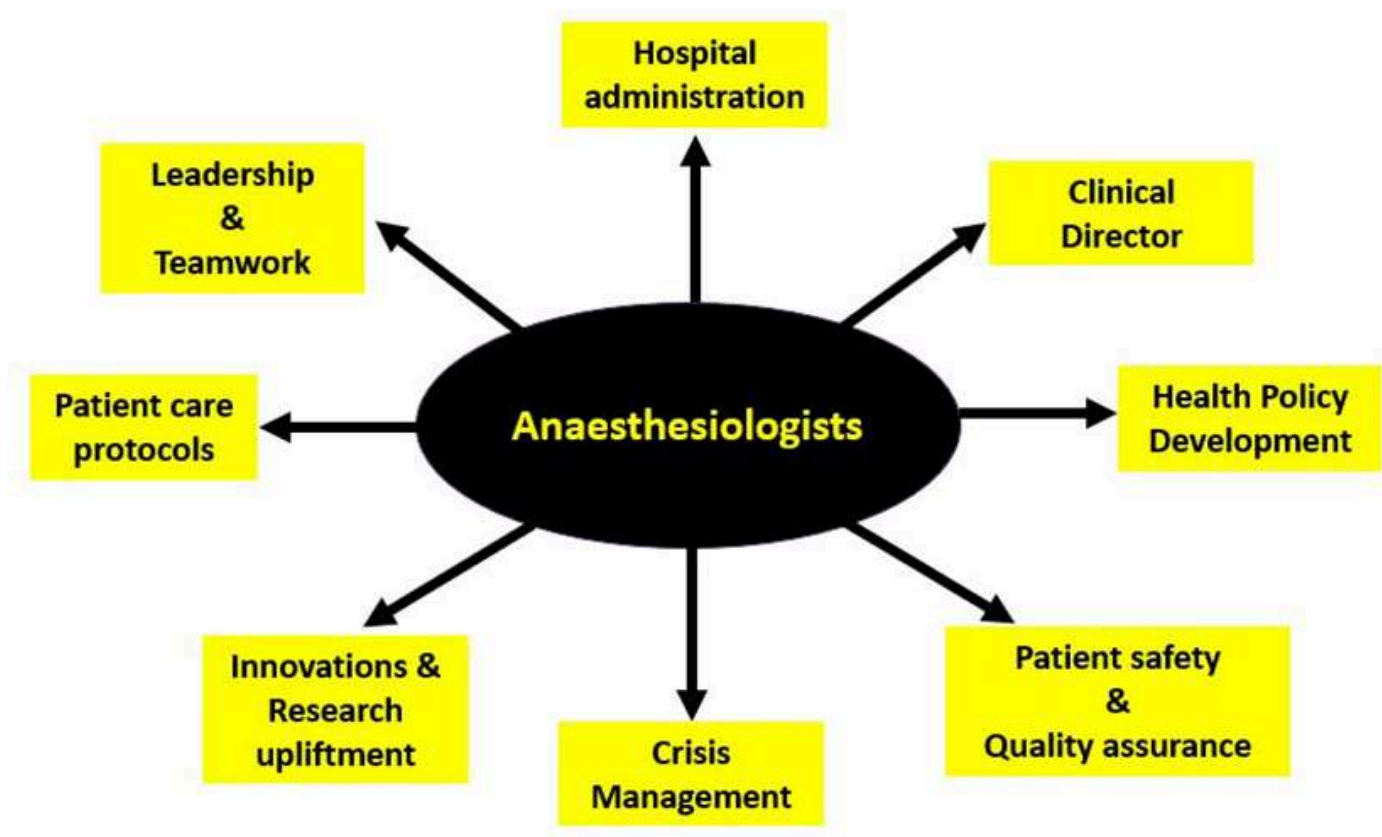
In the realm of research, anaesthesiologists as administrators can promote and support clinical studies that lead to innovations in medical practice. Their dual role as clinicians and administrators allows them to bridge the gap between research and practical application, fostering an environment where scientific discoveries are quickly translated into improved patient care protocols. Furthermore, their role in policy development also extends to addressing broader public health issues. For example, anaesthesiologists can lead initiatives to combat the opioid crisis by developing and implementing guidelines for safer pain management practices. Their expertise in pain management positions them uniquely to advocate for balanced approaches that minimise the risk of addiction while effectively managing patient pain.

While anaesthesiologists have the potential to excel in health system leadership, they also face challenges like under-recognition and limited visibility, lack of organised training on healthcare management, finance, and organisational behaviour and are overstressed by the demanding nature of the clinical anaesthesia services. While challenges exist, the potential benefits of anaesthesiologists in leadership roles are substantial. By recognising their contributions and providing opportunities for development, health systems can harness the full potential of anaesthesiologists as leaders.

As health system administrators, anaesthesiologists can influence policy development at institutional, regional, and national levels, promoting standards that prioritise patient well-being, improve outcomes and create more efficient and effective healthcare systems.

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Anaesthesiologists as Regulatory and Accreditation Leaders

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Anaesthesiologists play a vital role in providing quality care and ensuring patient safety within health care organisations. Beyond clinical expertise, many anaesthesiologists also step on leadership roles, influencing institutional, regulatory and accreditation processes. This involves participating actively in developing standard operating procedures, guidelines, protocols, recommendations, as well as overseeing compliance with the set regulatory requirements, standards and accreditation criteria.

About regulatory bodies and accreditation organisations

In India, regulatory bodies and accreditation organisations play a key role in ensuring that organisations adhere to established standards of quality, safety, and patient care. For instance, National Accreditation Board for Hospitals and Health care providers (NABH), sets standards and guidelines for various aspects of health care delivery, including patient safety and rights, infrastructure, and management system. Similarly, the National Medical Commission (NMC) oversees medical education, curriculum, training, professional conduct for health care professionals, conducting regular inspections, to ensure compliance with regulatory requirements.

Anaesthesiologists as regulatory and accreditation leaders

Anaesthesiologists contribute significantly to the development of standards and guidelines related to anaesthesia practice and perioperative management. They work with professional organisations, government

agencies, and regulatory or accreditation bodies to establish evidence-based guidelines that promote safety and optimise outcomes.

The Indian Society of Anaesthesiologists (ISA) National for example, brings together experts to review evidence, discuss best practices, and formulate standards that reflect recent advancements in anaesthesia practice. [1] During the pandemic, ISA National issued an Advisory and Position Statement regarding COVID-19. [2] Additionally, ISA has also provided Practice Guidelines on Preoperative Investigations, demonstrating their active role in developing standards and protocols to ensure patient safety and optimise outcomes in anaesthesia practice. [3]

Anaesthesiologists also actively participate in accreditation processes, by providing inputs on anaesthesia related standards, and performance metrics during accreditation surveys and assessments. [4] The key quality indicators for anaesthesia and surgical services include patient safety indicators such as monitoring adverse events, surgical outcomes, medication error, anaesthesia related complications; surgical outcomes, post operative complications, patient satisfaction. They are involved in continuous quality improvement efforts, including, regular audits, gap analysis, corrective measures, and implementing best clinical practices. They also manage responsibilities such as ensuring adequate staffing, equipment maintenance, emergency preparedness and adherence to medical and ethical standards. [4]

Many anaesthesiologists hold positions in regulatory bodies and committees responsible for developing and revising healthcare standards. They contribute to policy discussions, regulatory reviews, and updates to ensure that standards are evidence-based, practical, and conducive to safe and effective anaesthesia practice.

Anaesthesiologists also help set standards and curricula for anaesthesia education, ensuring quality training and accreditation through the NMC. They uphold ethical standards, professionalism, quality care, and continuous improvement in anaesthesia within the healthcare system. They play a crucial role in infection control practices by enforcing infection prevention protocols during anaesthesia procedures.

By actively engaging in research, education, collaboration, accreditation, and quality improvement efforts, anaesthesiologists help set benchmarks and develop protocols that prioritise patient safety, optimise outcomes, and ensure standardised, high-quality care delivery in anaesthesia and perioperative medicine.

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Sleep Medicine: an emerging tentacle of the anaesthesiologist

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Sleep: Myths and the Physiology

All of us have entered and experienced the secret inner world of sleep. Sleep has always been an attractive topic in mythology, the literary world of stories and novels and scientific research.

Ancient myths have surrounded the entity of sleep and have influenced modern sleep medicine and medical practice. The Greeks valued sleep because they believed that it was an apparent escape from the problems of the living world and that the dreams had prophetic

value. Hippocrates defined sleep as a whole separate state of existence. It is believed that the body and soul function during sleep.[1,2] Several famous authors and the characters in their stories and novels have suffered from sleep disorders. All of us have heard the fairy tale of the sleeping beauty, wherein a beautiful young princess is cursed and on her 16th birthday, pricks her finger on the spindle of a spinning wheel and falls into deep sleep for several years.[3] The American author Jack London known for his book 'Call of the Wild' suffered from insomnia and nightmares. This was clearly reflected in the characters in his books.[4] We, in India are aware of the mythological story of Kumbhakarna, the brother of the terrible demon Ravana. Kumbhakarna had an uncontrollable temper and used to sleep for great lengths of time. It has been questioned whether these fairy tale and mythological sleeping characters had been suffering from disorders of the hypothalamus. [5] Were they suffering from a sleep disorder? Were they temporarily dead? In fact, sleep has been described by some as a miniature death.

Sleep has always fascinated scientists and the true mystery of sleep has not yet been unveiled. The physiology of sleep has been explored since several decades. Studies on sleep and its relation with brain health, sleep disorders and disturbances, sleep onset, duration and quality are being conducted and are providing newer insights into sleep medicine.[6]

The overlap between Sleep and Anaesthesia

General anaesthesia (GA) and sleep are two distinct reversible states of unconsciousness. GA is medication induced, whereas sleep is naturally induced.[7] Neuroscientists and sleep scientists have investigated the brain nuclei and neural circuits underlying the reversible consciousness. The different areas of the brain that are involved in these states and their level of activity including arousal and excitation have been explored and have been found to be analogous.[7,8] Both anaesthesia and sleep

share biological mechanisms via gamma-aminobutyric acid (GABA)ergic pathway and hence they significantly impact each other.[7] GABA positive neurons of the ventrolateral preoptic and median preoptic nuclei are the common areas involved in sleep and anaesthesia.[9] The ventilatory depression and reduced muscle activation that accompany anaesthesia have their parallels in the sleep waveform.

How can an anaesthesiologist benefit from sleep medicine?

Sleep medicine is an outpatient-centric speciality that encompasses the understanding, recognition and management of disorders of sleep and circadian rhythm. It has been slowly evolving as a speciality. Many principles of this discipline overlap with anaesthetic practice.[10] Commonly used sedatives and analgesics have variable effects on sleep and the postoperative disturbances of sleep rhythm. Benzodiazepines act through GABA neurotransmitter and increase total sleep time and reduce sleep onset latency. However, they do not improve sleep quality.[11] Propofol delays sleep latency after anaesthesia and has been found to exacerbate the poor sleep quality of critically ill patients. Ketamine helps non-rapid eye movement (NREM) sleep, mainly slow wave sleep (SWS), increases total sleep and reduces the number of awakenings.[12,13] Opioids produce poor sleep quality, reduction of SWS and reduction in REM sleep. Dexmedetomidine is said to maintain high level of thalamic connectivity and the patient anaesthetised with dexmedetomidine tends to be more aroused after the surgery. Post-operative sleep disorders can suppress immune function and increase the risk of infection and cancer progression. They can impair autonomic nervous system function and lead to cerebrovascular or cardiovascular ischaemia and bronchial asthma. They can impair higher brain functions including memory storage and produce cognitive dysfunction. Therefore, understanding the effects of anaesthesia on sleep can help an anaesthetist and provide the patient with a sleep disturbance-free perioperative period.

Several substances that are used in sleep medicine are now being used perioperatively. Melatonin is a hormone which was originally used in the treatment of jet lag. It is now being used perioperatively to produce preoperative anxiolysis, perioperative analgesia, reduce intraocular pressure and prevent postoperative delirium.[14] GABA and L-theanine are two amino acids used to improve sleep.

They have been recently found to be clinically useful in providing preoperative anxiolysis with minimal sedation.[15]

The Society of Anaesthesia and Sleep Medicine (SASM) was founded in 2010 to explore the role of an anaesthesiologist to optimise the issues of perioperative sleep disorders that can impact a patient's perioperative course.[16] Sleep disorders affect up to 25% of the general population and are associated with an increased risk of adverse peri-operative events. Patients with sleep-related breathing disorders are at an increased risk for postoperative complications. Understanding these disorders can help in the practice of anaesthesiology and perioperative medicine.

Obstructive sleep apnoea (OSA) is an important perioperative sleep disorder and the anaesthesiologist as a perioperative physician with a good knowledge of OSA can play a major role in the improvement of perioperative patient outcomes in surgical patients with OSA. Nonetheless, a modified Delphi technique survey of experts in the fields of anaesthesia and sleep medicine identified key topics of sleep medicine that can be included in the design of the anaesthesia residency training curriculum. These topics include the definition and physiology of sleep, pharmacology of sleep, effects of anaesthesia and surgery on sleep and circadian rhythms, methods to assess sleep, OSA, central sleep apnoea, obesity hypoventilation syndrome, anaesthetic implications of other sleep disorders such as central disorders of hypersomnolence,

parasomnias, restless legs syndrome, impact of sleep deprivation on physician wellness and sleep in the hospitalised patient.[17]

How can an anaesthesiologist benefit sleep medicine?

Sleep in any hospitalised patient can be disturbed and this can lead to delayed healing. The challenges to normal sleep in hospitalised patients include environmental factors such as noise, bright light, overnight awakenings for observations, interventions, patient transfers, physiological factors such as pain, dyspnoea, bowel or urinary dysfunction case related factors such as medication / medications withdrawal and pre-existing unrecognised / inadequately managed sleep disorders. The anaesthesiologists with their knowledge of sleep can help the hospital leadership and staff to reduce these sleep disturbances by the use of appropriate drugs, staff education, creation of protocols to enhance sleep, improvement in hospital design and other strategies to reduce environmental disturbances.[18]

Anaesthesiologists, with their basic knowledge of sleep, anaesthesia and electroencephalography can also read sleep studies when providing monitored anaesthesia care for these procedures. [16] Commonly used anaesthetic drugs such as benzodiazepines, opioids and ketamine are used in the treatment of sleep disorders such as periodic limb movement disorder and restless legs syndrome.[7] Benzodiazepines such as alprazolam, lorazepam and diazepam are used for hypnosis and amnesia in anaesthetic practice and also for the treatment of sleep disorders such as short-term insomnia and parasomnias. Gabapentin which is used preoperatively in anaesthetic practice is also used in the treatment of insomnia. Studies have revealed that dexmedetomidine-induced sedation resembles the recovery sleep that follows sleep deprivation. A study in mice has found that oral dexmedetomidine has sedative and hypnotic effects and it dose-dependently promotes NREM sleep. However, whether it can be a candidate for the treatment of insomnia is yet not clear. [19] Future studies on this topic are necessary. Who else

can understand these drugs better than a sleep physician, psychiatrist and an anaesthesiologist?

We anaesthesiologists can thus certainly get trained in sleep medicine as a sub-speciality. Nevertheless, in March 2011, the American Board of Medical Specialties approved the request of the American Board of Anesthesiology for sponsorship of sub-speciality certification in sleep medicine.[20]

Anaesthesiologist as a researcher in sleep medicine

Research in sleep medicine may reveal the yet unfolded secrets of sleep induced by anaesthetics. The neural circuits that underlie GA and sleep need to be researched upon in depth to help us understand better the mechanisms of sleep and anaesthesia.[8] The correlation between the sleep and arousal hormone orexin and analgesic and anaesthetic drugs and inhalational anaesthetic agents needs an in-depth exploration. High quality research into the impact of hospitalisation on sleep and the effects of poor sleep on health outcomes after hospitalisation is needed. The fields of anaesthesiology and sleep medicine have the potential to be mutually informative to both clinicians and researchers about aetiologies and risks for respiratory instability during non-wakeful states.[21]

There is a need for exploring the similarities and differences between sleep and anaesthesia, the breathing behaviour during sleep and anaesthesia, the effect of anaesthesia on sleep and the effect of sleep disorders on perioperative outcomes and this can be a topic of research in dissertations by postgraduate students in anaesthesia. It has been suggested by some authors that the incorporation of sleep science research into anaesthesiology can contribute to the developing knowledge base of anaesthesiology.[22]

Analgesic agents possess a capability to be a desirable treatment of sleep disorders, and possibly vice versa. Thus, collaborative research

in sleep and anesthesia has the potential to open up new research avenues in both these fields of study.[7]

To conclude, the specialities of sleep medicine and general anaesthesia share a common ground. Anaesthesiologists with their knowledge of sleep medicine can improve peri-operative sleep health and perioperative outcomes, sleep in critical care units and sleep in hospitalised patients. They can work as sleep physicians and help in the recognition and treatment of various sleep disorders. An additional career in sleep medicine can be exciting for an anaesthesiologist.

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Anaesthesiologist : a multifaceted doctor

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Anaesthesiologists are highly skilled physicians who play a crucial role in modern healthcare, specialising in anaesthesia management, pain relief, critical care, and emergency medicine. Their expertise spans across various medical settings, making them indispensable in ensuring

patient safety and optimal outcomes throughout the perioperative period.

In the realm of surgery, anaesthesiologists are responsible for administering anaesthesia to patients undergoing procedures. Their role begins with a comprehensive evaluation of the

patient's medical history and current health status to devise a tailored anaesthesia plan. This plan not only aims to ensure the patient remains unconscious and pain-free during surgery but also involves monitoring vital signs such as heart rate, blood pressure, and oxygen saturation throughout the procedure. Anaesthesiologists continuously adjust anaesthesia levels to maintain stability and respond promptly to any changes or complications that may arise, such as adverse reactions or unexpected shifts in the patient's condition.

Beyond the operating room, anaesthesiologists are pivotal in managing pain, both acute and chronic. They utilise a variety of techniques including nerve blocks, epidurals, and systemic medications to alleviate discomfort and improve patient comfort. Their expertise in pain management extends to collaborating with other healthcare providers to develop comprehensive treatment plans tailored to individual patient needs. By effectively managing pain, anaesthesiologists not only enhance patient recovery but also contribute significantly to improving overall quality of life.

In critical care settings, anaesthesiologists are instrumental in managing patients with life-threatening conditions. They possess advanced skills in airway management, haemodynamic monitoring, and the administration of medications to stabilise and support critically ill patients. Anaesthesiologists are often at the forefront during emergency situations, leading resuscitation efforts and providing immediate interventions such as intubation, mechanical ventilation, and advanced cardiac life support (ACLS). Their ability to make rapid, informed decisions under pressure is crucial in ensuring positive patient outcomes during critical events.

Anaesthesiologists are also proficient in both Basic Life Support (BLS) and Advanced Life Support (ALS) techniques. In BLS scenarios, they are trained to assess and manage emergencies such as cardiac arrest, initiating cardiopulmonary resuscitation (CPR), and maintaining airway patency. In more complex

ALS situations, anaesthesiologists employ advanced techniques such as endotracheal intubation, defibrillation, and the administration of intravenous medications to restore and stabilise patients' vital functions. Their expertise in interpreting electrocardiograms (ECGs) and managing complex cardiac rhythms allows them to provide timely and effective care during critical emergencies.

Education and training are integral components of anaesthesiologists' roles. They actively participate in the education of medical students, residents, and fellows, sharing their knowledge and clinical expertise in anaesthesia management, pain relief, and critical care.

Anaesthesiologists also play a crucial role in providing continuing education and professional development opportunities for healthcare professionals, ensuring that the broader medical community remains well-prepared to handle emergencies and deliver high-quality patient care.

In conclusion, anaesthesiologists are versatile and highly skilled medical professionals who contribute significantly to patient care across anaesthesia administration, pain management, critical care, and emergency medicine. Their expertise and dedication ensure the safe and effective management of patients throughout the perioperative period and in critical care settings. Through their comprehensive skills, continuous education, and commitment to patient safety, anaesthesiologists uphold the highest standards of medical care and contribute to improved patient outcomes in diverse healthcare settings.

Anaesthesiologist: the first doctor to adopt newer technology in the hospital set up

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Technological innovation has always been closely associated with the growth of modern anaesthesiology. Since time immemorial, a symbiotic relationship between anaesthesiologists and technology is known to exist.

Anaesthesiologists are often among the first to adapt to new technologies in hospitals. This is because anaesthesia requires constant monitoring of the patient's vital signs, precise administration of drugs and immediate response to changes in patient status.

Looking briefly at the timeline, it was seen that anaesthesiologists developed their professional identity in 1920s and 1930s with the primary focus on developing effective equipment and techniques for anaesthetic delivery. The 1940s and 1950s were associated with growth of “machines” in anaesthesia—modern anaesthetic vaporisers, the blood-gas analyser, continuous electrocardiography and electroencephalography. In the 1960s and 1970s, “automation” entered the picture, as simple mechanical ventilators and automated non-invasive blood-pressure devices began to be used routinely. The 1980s and the 1990s, the era of the computer revolution, saw the emergence of advanced machines like the anaesthesia workstation, the ultrasound, the pulse oximeter, the capnograph, and the mannequin simulator. Anaesthetic delivery technology also became more automated, and target-controlled infusion devices gained momentum.

The evolution of technology in anaesthesiology and perioperative medicine since 2000 has mainly focused basically on five things: 1) the development of advanced physiological monitoring systems, 2) the electronic health record, 3) the use of clinical research to evaluate the impact of technologies on patient outcomes, 4) applications of computer science, robotics, and engineering in the perioperative environment, and 5) the promotion of patient safety and cyber security through coordination between technologies (device interoperability) and health informatics systems.

Recent technological advances have tremendously changed anaesthesia practice. The integration of new technologies like (wireless communication) has improved the control of anaesthesia delivery and patient monitoring during procedures. Application of artificial intelligence approaches like machine learning has shown a greater potential to further transform the field and improve patient care.

Robotic and closed-loop anaesthesia systems are also evolving. Notable examples include the Kepler Intubation System, which enabled robot-assisted tracheal intubation, and the Magellan system, which performed robot-assisted ultrasound-guided nerve blocks. Fully automated anaesthetic delivery has also come up from automated general anaesthesia to automated sedation.

While developing nations still need to catch up, developed nations have embraced technology and are far ahead.

Multitasking in operating room- Teaching the surgical residents too!

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That the clinical work in anaesthesia involves multitasking in operating rooms and intensive care units is a well-known fact. Along with the clinical work, teaching while at work is a unique challenge in itself as it takes place in a dynamic and fast-paced setting where the residents and consultants also have patient care work to do. Along with training of the anaesthesia residents, anaesthetists often end up teaching the residents of surgical speciality, directly or indirectly. As the two teams, anaesthesia and surgical, are posted together for many consecutive hours, the clinical situations provide multiple opportunities to discuss the complexities of patient care. The training or learning from anaesthetist is not a written mandate in any curriculum of surgical residency, despite being a common phenomenon, this remains unrecognised.

Anaesthesia consultant can be often found discussing the nuances of fasting guidelines for solids, clear liquids, or milk with the surgical residents. This discussion is relevant because the patients getting operated on day care basis usually receive preoperative fasting instructions from surgical residents in their outpatient departments or telephonically. It is not possible for anaesthesia teams to approach these patients previous evening. When a sub-optimally fasted paediatric/adult patient comes for procedure under anaesthesia, the discussion extends from harms of general anaesthesia in a full stomach patient to the appropriate number of hours of fasting as well as types of beverages that can be considered clear liquids.

During pre-anaesthetic check up and optimisation of patients for elective surgery, there is a frequent discussion between surgery and anaesthesia teams about the modifiable and non-modifiable risk factors. Morning high blood pressures especially the diastolic records, poor effort tolerance despite

normal resting echocardiography, duration of omission of certain drugs in preoperative period, there are multiple aspects which are discussed daily and help inculcate clinical decision making in residents of both specialities. It is emphasised that while intraoperatively the patient is closely monitored, it is the postoperative course that can be difficult if the risk factors are not considered in detail.

The transfusion of blood or blood products intraoperatively is another significant topic of discussion. The criteria for blood transfusion, allowable blood loss, pros and cons of blood and blood product transfusion, are analysed providing insight to the residents of both anaesthesia and surgical team. The literature regarding this is available in abundance but case by case table teaching is altogether a different dimension of learning.

The most important of all the management aspects is the clarity and consensus of teams regarding postoperative management of the patient. While the anaesthesia team will be available for first 5-6 hours postoperatively, the surgical resident manages the postoperative patient for a much longer duration. Starting from monitoring required to intravenous fluid therapy to analgesia and management of postoperative complications, the consensus on all these factors ensures a smooth postoperative recovery.

Lastly, not to forget that many a times, one will find a senior anaesthetist reassuring a surgical resident to operate to the best of his/her abilities and not worry about the vitals of the patient, selflessly supporting the budding surgeon. Thus, mentoring of younger surgeons helps bridge the gaps in understanding from both anaesthesia and surgical point of view, thereby, streamlining the perioperative course of patients.

Anaesthesiologist - a multidimensional clinician

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A ray of white light, though seemingly singular, conceals seven distinct colours that are vividly unveiled when passing through a prism. This dynamic range of hidden hues aptly symbolises the multifaceted nature of an anaesthesiologist, both inside and outside the operating theatre. Observing an anaesthesiologist at work often evokes the image of Goddess Durga, adeptly managing her multiple responsibilities.

An anaesthesiologist seamlessly embodies various crucial roles—much like a person takes on the roles of child, spouse, parent, colleague, and friend. My own role as a perioperative physician involves preoperative optimisation, intraoperative management, and postoperative care, including pain management. I am also deeply involved in the DNB students' educational programme,[1] guiding them from initial coursework through to thesis submission and final exams. My responsibilities extend to training and skill development for operating theatre staff, anaesthesia technicians, and pain nurses, and I regularly participate in updating ACLS and BLS skills for the hospital staff.

As a chief neuroanaesthesiologist, I oversee our fellowship programme. Many anaesthesiologists also undertake various administrative tasks like scheduling operative slots, duty assignments, and quality control, which include maintaining crucial records such as the opioid register and patient files.

Over the years, I have engaged extensively with the Indian Society of Anaesthesiologists (ISA). Currently, as the Honorary Secretary of my branch, I coordinate a range of academic and

non-academic activities, from public awareness campaigns[2,3] and technicians' training courses to cultural events and environmental initiatives.

In my role as SAMS news editor, I connect with various ISA branches, gathering and sharing insights from our members who not only contribute professionally but also excel in extracurricular activities like painting, singing, dancing, trekking, sports, marathon participation, fitness and yoga, various art forms and even winning beauty pageants!

I firmly believe that anaesthesiologists are exceptionally versatile doctors, capable of adapting to myriad roles within their professional sphere and beyond.



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ANAESTHESIOLOGIST AS AN EDUCATOR

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Anaesthesiology is an ever-evolving dynamic branch and the anaesthesiologist plays a critical role in the perioperative period as an influential educator. One may ask what is the difference between an educator and a teacher. The teacher is an expert in a particular field and imparts information to the students in a limited setting. At the same time, an educator covers all areas of the development of an individual.

The first contact as an educator is with undergraduates and postgraduate students giving essential knowledge about anaesthesia techniques, drugs, monitoring, and perioperative care. We train these budding anaesthesiologists to develop critical thinking, sharpen their approach, and make tough decisions in crisis management. We coach them through didactic lectures, seminars, case discussions, audits, and hands-on training. We teach students that as the worthy partner of the surgeon, we need to maintain a composed environment and decorum in the operating room. As one of my colleagues Dr. Massand says, we are like Sanjay, the Sarathi of Dhritarashtra from Mahabharat who helps the surgeon from behind the screen as we have seen many surgeries and worked with an array of surgeons, we can offer a different perspective and at the same time keep the patient stable so that they can continue their work without many difficulties. Hence, we are imparting knowledge not only to medical students; we are a security net for our surgical colleagues. The gamut of learners also includes operation theatre (OT) technicians and nurses indulging in post-operative care. We train them in OT management, bio-waste disposal, equipment maintenance, drug preparation and disinfection, and sterilisation of OT. Anaesthesiologists can contribute as educators to society by teaching life-saving procedures. I greatly admire 'Guru Shishya Parampara' and find the validity of tradition in

our current teaching scenario. The students are living away from their families and are learning not only from the textbooks but also from the clinical work. To be an educator, a few skills need to be imbibed like dedication, sincerity, and commitment towards the subject, willingness to teach, and devoting time to teaching. We must enjoy the process of becoming a mentor, and maintain interactive professional relationships. It is also important to set boundaries and respect them. An educator is a mentor, philosopher, guide, and friend.

For an effective learning experience, it is important to identify the resident's basic level of knowledge, acknowledge his acumen, and delineate their strengths and weaknesses. Learning in anaesthesiology is on a day-to-day basis and with every case. The learning starts with the pre-anaesthetic check-up that helps the resident develop an operating room action/organisation plan. Challenge the resident to be prepared for the unexpected and direct the resident to reflect on the organisation and implementation of a plan. An educator needs to follow through on tasks given to residents that were intended to improve a resident's performance in specialised areas. It is imperative to provide immediate and honest feedback constructively.

To keep up with educational development, an educator must keep attending workshops, and seminars, and keep himself updated with the recent development in the subject. Along with the educational development, it is important that mental well-being is taken care of and the occupational fatigue does not set in. This can be prevented by indulging in hobbies, spending time with families and taking well intended breaks. To conclude with the words of Judy Blume, "Our fingerprints don't fade away from the lives we touch."

Anaesthesiologist in disaster management : Technical and non-technical skill application

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Disaster and the health-care system:

Disasters such as earthquake, floods, global pandemics (Ebola and COVID-19) create a serious mismatch in the health care system. Management of the acute crisis and the after-effects requires robust response from the health care system.[1]

Disaster management skills:

Since disasters occur without prior warning, it becomes imperative to develop a comprehensive plan pre-emptively for the effective utilisation of health care facilities and manpower, wherein their technical skills (TS) and non-technical skills (NTS) play an important role.

Essential TS during various stages of disaster management-[2]

- Pre-hospital level-include triaging, securing intravenous access, airway resuscitation, cardiopulmonary resuscitation and maintenance of haemodynamics. Anaesthesiologists being masters of operation theatre(OT), intensive care units (ICU) and emergency room(ER) are champions of all the above life saving skills.
- Evacuation stage- Transportation to the hospital requires a specialist doctor such as an anaesthesiologist who can maintain airway and haemodynamics.
- In-Hospital definitive management- ICU and OT care obviates the important role of anaesthesiologist.
- Pain management – Sometimes life-saving limb disengagement in the field, requiring analgesics and anaesthetics (ketamine) can be provided only by an anaesthesiologist.
- Rehabilitation – Long term pain (nerve injury, phantom limb) management by pain physicians (anaesthesiologists).

Essential NTS during various stages of disaster management-[3]

- Communication skills- By enhancing the confidence among team members, a good communication also provides effective access to the affected people and vital information. A good communication also can further gain the authority's confidence.
- Situational awareness – From knowledge about various hazards of disaster (including prior and aftermath) and identifying the potential problems, a plan of action can be suggested based on analysis of the available information during the disaster.
- Knowledge of human resources and coordination skills- This skill facilitate an efficient working environment with the entirely different/new group of responders. Coordination skills facilitate positive collaborations among local, national and international medical help teams, thereby ensuring timely reach of medical supplies and equipments.
- Decision-making, critical thinking and problem-solving skills- is the quality of a leader. Team's safety and efficient management depends upon this skill.

Apart from leadership qualities, studies have shown that anaesthesiologists are experts in situational awareness, communication and team work.[4]

Anaesthesiologist - a key member of disaster management team :

Skills of anaesthesiologists

TS - triage, airway, critical care, pain and OT management.

NTS - Manage OT/ ICU resources and manpower, Staff/patient education, protocol formulation and hospital management.

Anaesthetists' non-technical skills (ANTS) programme, a popular training on- task management, team working, situation awareness and decision making.[5] Integration of TS with NTS makes the anaesthesiologist a backbone and a champion leader in disaster management worldwide, a recent example being the COVID-19 pandemic.

Future prospects:

- Anaesthesiologists as prime players / leaders in formulating disaster response team/protocols at the hospital, national and international level.[1]
- Implementing ANTS programme at the training level.[6]

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IDEA TO INNOVATION

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If you have an idea you want to bring to existence but are unsure how to proceed, you're not alone. As anaesthetists, we often get caught up in routine work and patient care and may not realise our potential to innovate. Our first-hand experience with medical equipment gives us unique insights into potential improvements or new designs that could enhance patient outcomes.

Innovation can range from minor modifications—like small equipment changes or add-ons to existing devices—to significant developments, such as creating entirely new equipment. Before diving into product development, it is essential

to measure the potential impact of your idea (Impact measurement). This can be achieved through well-designed questionnaires targeting experienced users. These questionnaires, which can include multiple-choice or open-ended questions, should aim to evaluate the efficacy of the proposed product. Typically, gathering 20-30 responses is sufficient for medical innovations.[1]

Once you are confident that your idea has a significant impact, securing Intellectual Property Rights (IPR) is the next step. To secure a patent, ensure your invention is novel, non-

obvious, and has industrial applicability. Perform a thorough patent search to verify its uniqueness. Draft a detailed patent application, including specifications and claims, and file it with the Indian Patent Office online or at one of the Delhi, Mumbai, Chennai, or Kolkata offices. After 18 months from the filing date, the application is published in the Patent Journal. Within 48 months, request an examination of the application.[2] The examiner will review it and issue a First Examination Report (FER); you must respond to any objections raised. If all requirements are met and objections resolved, the patent is granted and published in the Patent Journal. If you are not confident you can do this yourself, numerous private and government-appointed IPR agents can assist you with some fees.

Concurrently, you will need to work on product development, which often requires funding and guidance to develop. Fortunately, the Indian government offers various grants and support through incubation centres, such as those at IITs, technology hubs, and bio-innovation centres. For instance, the Biotechnology Ignition Grant by the Biotechnology Industry Research Assistance Council (BIRAC) offers up to INR 50 lakhs for early-stage ideas with commercialisation potential. Other notable grants include the Funding Opportunity for Innovations in Medical Devices and Healthcare Technologies (FORGE), the National Biopharma Mission (NBM) – Innovation Ecosystem Development (iED) Program, and various support grants from the Ministry of Small and Medium Enterprises (MSME) and the Department of Science and Technology (DST).

After developing your product, it is crucial to test its functionality. The same group you approached for impact measurement can now be asked to use your product in trials or studies to ensure it meets the intended purpose. With a working innovation, you can move on to manufacturing and marketing. You can either become an entrepreneur or transfer your IPR to a manufacturer at this stage.

In conclusion, anaesthetists have a unique vantage point in identifying and innovating medical equipment solutions addressing critical patient care needs. They can safeguard their innovations by conducting impact measurements through targeted questionnaires and securing IPR. With the support of government grants and incubation centres, such as those provided by BIRAC and DST, these innovations can progress from concept to prototype. Once developed, real-world testing ensures efficacy before moving to manufacturing and marketing. Whether continuing as entrepreneurs or partnering with manufacturers, anaesthetists can significantly contribute to medical advancements, ultimately enhancing patient outcomes

Disclaimer:- This article is only to sensitise readers and does not contain complete information.

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Changing Models of Care: Anaesthesiologist as a perioperative physician

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Sector-32, Chandigarh

ISA No. S3544



Surgical practice has progressed to more complex procedures being increasingly performed in greater numbers in a more challenging subset of patients. The field of anaesthesiology has kept in step and is evolving continuously to provide wholesome perioperative care, ensuring patient safety and early recovery with favourable outcomes. The development of various subspecialties like cardiac, neuro-anaesthesia, paediatric, obstetric anaesthesia, pain, critical care/ intensive care, palliative care, onco-anaesthesia, regional anaesthesia/ acute pain medicine management, transplant anaesthesia etc has made an anaesthesiologist as a true perioperative physician who provides patient-centered, multidisciplinary, and integrated medical care from the time surgery is considered to the time the patient is fully recovered.[1]

The role of an anaesthesiologist as a perioperative physician is manifold. It starts from the first encounter with the patient in the pre-anaesthesia clinic where through effective communication and diligent physical examination, risk stratification, optimisation of multiple comorbidities, shared decisions are made in cooperation with the surgeon and the patient.

Another aspect of this practice is facilitating smooth and early recovery using enhanced recovery after surgery protocols. Anaesthesiologists play an indisputable role in pain management with their expertise in multimodal analgesia, central neuraxial blocks to peripheral nerve blocks and newer segmental anaesthesia.[2] Poorly managed pain can lead to the development of chronic pain and depression. Critical care has always been the domain of anaesthesiologists and they have continually expanded their repertoire to multiple diagnostic and therapeutic interventions. Using their unique skills in advanced airway management,

performing invasive procedures like central lines, arterial lines, dialysis catheters, bedside percutaneous tracheostomy, grasp on dynamic and static parameters in guiding fluid and vasopressors, modes of mechanical ventilation, anaesthesiologists are best placed to provide comprehensive perioperative care. Multiple head to toe applications of point of care ultrasound has paved way for holistic level of patient care by facilitating timely diagnosis and on the spot management.

Despite these progresses, the concept of the anaesthesiologist as a perioperative physician is still nebulous. Post surgery medical care, plan of discharge from high dependency units, appropriate postoperative rehabilitation and monitoring surgical complications must include involvement of an anaesthesiologist. Postoperative mortality is the third most common cause of death after cancer and heart disease.[3] Evidence points to the fact that there is unmet demand to assess the quality of the perioperative care provided.[4]

Advancement in the applications of artificial intelligence can aid in reducing variability in decision making in perioperative care. AI related technologies can analyse huge amount of data which can help in predicting readmission and mortality in at risk patients, detect complications early, fasten the acute care needed for the patient safety and assist in determining areas needing quality improvement.[3]

The anaesthesiologist should be willing to shoulder the responsibility of patient outcomes favourable or otherwise. This would lead to the widespread acceptance of anaesthesiologists as perioperative physicians rather than a strictly defined technical role of administering anaesthesia in the operating room.

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71st Annual Conference of Indian Society of Anaesthesiologists

20th 21st 22nd 23rd 24th November 2024
Venue: Samrat Ashok Convention Center, Patna

REGISTRATION TARIFF

Slabs	ISA Member			Non ISA Member			Indian Accompanying Person	Overseas Delegate	Overseas Accompanying Person
	Conf	Conf + CME	PG Conf + CME	Conf	Conf + CME	PG Conf + CME			
Regular 01st Mar to 31st Jul 2024	₹ 12500	₹ 14000	₹ 11000	₹ 25000	₹ 28000	₹ 21000	₹ 8500	\$ 160	\$ 130
Late 01st Aug to 31st Oct 2024	₹ 15500	₹ 17000	₹ 13000	₹ 31000	₹ 34000	₹ 24000	₹ 9500	\$ 190	\$ 150
Spot Registration 01 Nov onwards	₹ 18000	₹ 19500	₹ 15000	₹ 36000	₹ 39000	₹ 29000	₹ 11000	\$ 220	\$ 160

**above rates are inclusive of GST 18%.*

Conference Workshops

Workshop Name	Course Director	Fees	Date
Comprehensive Cardiac Life Support	Dr. SSC Chakra Rao	5000	19 th & 20 th Nov 2024
Hemodynamic Monitoring	Dr. J. V. Divatia	3000	20 th Nov 2024
Practitioners Module: Managing the Common Crisis	Dr. Sukhminder Jit Singh Bajwa	2500	20 th Nov 2024
Regional Anaesthesia	Dr. J Balavenkata Subramanian	3000	20 th Nov 2024
Research and Publication	Dr. Rakesh Garg	2500	20 th Nov 2024
Interventions in Chronic Pain	Dr. Murlidhar Joshi	3000	20 th Nov 2024
Airway Management	Dr. Sheila Nainan Myatra	3000	20 th Nov 2024
TIVA and TCI	Dr. G.D. Puri	3000	20 th Nov 2024
Mechanical Ventilation	Dr. Pradip K. Bhattacharya	3000	20 th Nov 2024
ITLS- Immediate Trauma Life Support	Dr. Kajal Jain	3000	20 th Nov 2024
Leadership and Communication Skills	Dr. P. L. Gautam	2500	20 th Nov 2024
Simulation Based Perioperative Crisis Management	Dr. Vivek Chakole	3000	20 th Nov 2024
POCUS	Dr. Pankaj Kundra	3000	20 th Nov 2024



FOR MORE INFORMATION VISIT

www.isacon2024patna.in



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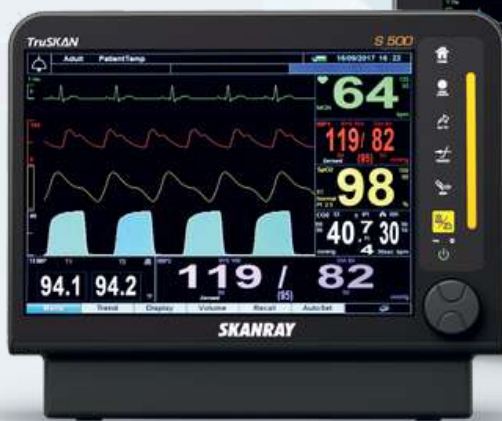
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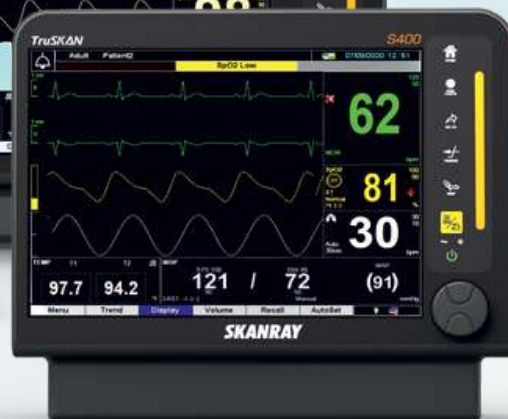
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INDIAN SOCIETY OF ANAESTHESIOLOGISTS

KERALA STATE CHAPTER

KPR YOUNG ANAESTHESIOLOGIST AWARD – 2024

Applications are invited from Anaesthesiologists who are life members of ISA and working in India

for the *KPR YOUNG ANAESTHESIOLOGIST AWARD -2024*

ELIGIBILITY

Should be within 10 years after the post-graduate qualification. Should be a life member of ISA.

SELECTION CRITERIA

Research and publication in the field of anaesthesia and allied specialities. Academic and professional achievements Contributions to ISA Contributions to Social and Public causes. The last date for submission is 31st July 2024. Please email the undersigned before drafting your application.

Dr. Suneel PR

Coordinator, KPR Endowment,

Professor in Anaesthesiology

SCTIMST,

Trivandrum, Kerala-695011

Ph:9847280218,

Email: suneelpr@gmail.com

ISA ACTIVITIES

Erode Society of Anaesthesiologists

Erode Society of Anaesthesiologists has released a public awareness video on Basic Cardiopulmonary Life Support (BCLS) on their YouTube channel, "Erode Society of Anaesthesiologists." The video, aimed at educating the general public, is part of our ongoing efforts to promote healthcare awareness and empower individuals with life-saving skills.

The video was officially launched on **April 7, 2024**, at 3:30 PM, in the presence of esteemed guests. Among them were ISA Tamil Nadu office bearers Dr R. Selvakumar (ISA TN President), Dr N. Basker (ISA TN Secretary), Dr S. Giridharan (ISA TN Treasurer), and Dr S. Murugan (Medical Director of Erode Medical Centre, Erode). The video was released by these distinguished ISA TN officials - Dr. S. Murugan and Dr. Kanagachala Kumar T (Rtd. Joint Director of Health, Erode), adding to the event's prestige.



The team in Erode also conducted the ESA Wellness Program 18, which featured a cricket event held on **May 18th, 2024**, from 7:00 PM to 9:00 PM at the OMG Turf Cricket Ground, Erode. The event was a great success, fostering team spirit and promoting physical wellness among our members. Participants thoroughly enjoyed the friendly matches and the camaraderie shared during the evening.



ISA Palanpur Branch, Gujarat

On 04-04-2024, Palanpur Branch, Gujarat organised an educative and interactive programme at Alive Restaurant, Palanpur. The following topics were discussed:

- 1.To Infinity and Beyond: The Past, Present, and Future of TeleAnaesthesia by Dr Balraj Joshi.
- 2.General discussion for consent for Anaesthesia for private Anaesthesiologist.



On **19-04-2024**, for the first time in District Banaskantha, Organ Donation counselling of Brain Dead Patient was done and NOK gave consent for donation. It was very well received locally and statewide with immense media coverage.



अहमदाबाद सिविल अस्पताल की अंगदान के क्षेत्र में एक उल्लेखनीय उपलब्धि

“विश्व लीवर दिवस” पर 150वां अंगदान : एक लीवर, दो किडनी दान , तीन साल में 150 अंगदान

बनासकांठा जिले के डिसा के मूल निवासी अर्जुन ठाकुर का ब्रेन डेड हो गया और उनके परिवार ने अंग दान करने का फैसला किया। 150 अंगदान की उपलब्धि दमक और प्रतिबद्धता का परिणाम - डॉ. राकेश जोशी, सिविल अस्पताल अधीक्षक

[illegible]



સંદેશ
 ચૈત્ર સુદ બારસ

‘વિશ્વ લિવર ડે’ના દિવસે સિવિલ હોસ્પિટલને મળ્યું ૧૫૦મું અંગદાન

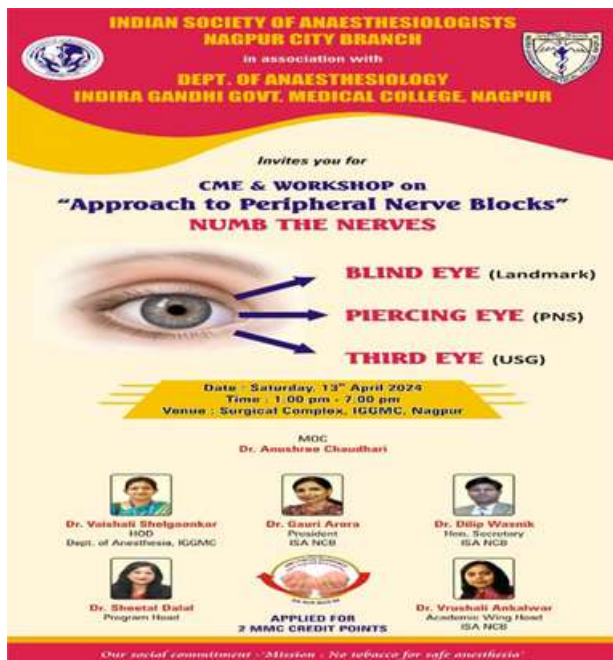
એક સિવર, બે કિડનીનું દાન મળતાં ત્રણ જરૂરિયાતમંદ દર્દીઓને નવજીવન મળશે

[illegible]

Organised a unique public awareness programme on "Role of anaesthesiologists and the myths of anaesthesia" at Scientific Hall, Laxmi Nagar, Nagpur. It was an infotainment program *Madhosh Kiye Ja* in which myths about anaesthesia were discussed along with melodious songs. (7th April 2024- World Health Day)



CME and Workshop on "Approach to Peripheral Nerve Blocks" : Numb the Nerves" at Surgical Complex, IGGMC, Nagpur (13th April 2024)



**Late Smt. Vaishali Malegaonkar Memorial Interesting Case Presentation competition
at M T Paithankar Hall , IMA House**

**First prize - Dr Shweta Bulle and the 2nd prize -Dr Priyanka Khondalay.
(23rd April 2024)**



**Compression Only Life Support(COLS) demonstration and hands-on
training for the students of Kamla Nehru Mahavidyalaya,
Budhwarpeth, Nagpur
(1st April 2024)**



**COLS program at Pugalia Nursing Home, Wardhaman Nagar Nagpur
(2nd April 2024)**



**BCLS training of 182 interns at IGGMC, Nagpur in intern orientation
programme 2019 batch
(5th April 2024)**



BLS demonstration for members of 'Sewankur' an organization of Medical Students which aims to develop Socially Conscious HealthCare leaders
200 medical students (MBBS, BDS, BAMS) enthusiastically participated.
(14th April 2024 - Dr B. R. Ambedkar's Birth Anniversary.)



ISA Activities by Andhra Pradesh State Branch

On 6th and 7th April, 2024, the ISA and ISCCM Vijayawada city branch jointly conducted the two days CME and Workshop on Point of Care Ultrasound Guided Regional Anaesthesia (POC-UGRA). Stalwarts and experts in this field came to forefront in giving hands-on-training to the delegates who attended the workshop in large numbers.

On 16th April, 2024, the ISA Guntur city branch conducted their monthly academic meet in the IMA Mini auditorium. Pioneer in capnogram and obstetric anaesthesia stalwart, Dr. Kodali Bhavani Shankar from USA enlightened the audience with his talks on two important topics of his domain 'Capnography – how do I use it?' and 'Obstetric airway – what did we learn'. The event was well attended by more than 40 delegates.

On 26th April, 2024, the ISA Visakhapatnam city branch held their monthly academic meet in the auditorium of Apollo hospitals, Health City and discussed two important topics 'Death on table – Medicolegal perspective' and 'How do I do it - Anaesthesia for robotic surgeries - Our experience'. The first topic was presented by Dr. S. Sreedhar Reddy (Vice Principal, NRIIMS) and the later one by Dr. Vibha Shree PS (DNB resident, Apollo hospitals).



POC-UGRA CME & Workshop
(6th & 7th April, 2024)



ISA Guntur city branch academic meet
(16th April, 2024)



ISA Visakhapatnam city branch academic meet
(26th April, 2024)

ISA KARAD ACTIVITY

The Karad Society of Anaesthesiologists conducted a training of BCLS and an awareness campaign of "Compression Only Life Support " on **25/04/2024** at "Sanjeevan Cardiac Centre" in the presence of a cardiologist for the Paramedics, Doctors on duty, relatives of the patients and Ancillary staff. Trainer was Dr. Jayawant Patil. Total 72 members attended and got the benefit of hands on training on mannequin.



ISA KOLHAPUR ACTIVITY

Blood Camp Activity

7th April 2024(World Health Day)

The Inauguration programme was attended by a mixed crowd of about 100 Medical, Nursing and Physiotherapy students.

Blood Donation camp turned a successful event due to active participation and voluntary blood donations by postgraduate students from Dept.of Anaesthesiology, Ophthalmology, Surgery, Orthopaedics, Physiotherapy and Pathology.



**Compression only life Support(COLS) at DY Patil Medical College and Hospital, Kolhapur for
100 Physiotherapy and Nursing students
7th April 2024**



**COLS by Dr. Shashikant Sagaonkar in Orchid Hospital, Kolhapur for 30 staff
12th April 2024**



**Dr. Vitthal Patil for Hospital Staff, Tulashi Hospital
12th April 2024**



COLS Training at Devchand college, Nipani (Belgavi - Karnataka) for staff members



**COLS by Dr. Vitthal Patil for Jeevan Dhara hospital, Mudhal Titta for around 25 staff
18 April 2024**



**COLS by Dr Vitthal Patil at Shrikrushan Saraswati Maternity Nursing Home, Kolhapur
18th April 2024.**



**COLS By Dr Shashikant Salgaonkar in Ananta Plastic Care Hospital for 30 staff
24th April 2024**



ISA Kolhapur in association with Kolhapur Medical Association (KMA) branch of IMA have started a Basic life support certificate course.

The first such activity was conducted on 28th April 2024 at KMA Hall, Belbaug for Nursing staff. 15 candidates registered for this course.



**Case discussion on "Anaphylaxis: A Real-Life Case Scenario" by Dr. Abhishek
24th April, 2024. KMA Hall, Belbaug.**

Expert panelists including senior experienced consultants: Dr. Paranjape, Dr. Sandeep Kadam, and Dr. Maruti Pawar. Moderation was handled by Dr. Dinesh Ekambaram and Dr. Supriya Pawar. Secretary Dr. Sachin Kumbhar extended a warm welcome to the esteemed panelists and SAK members. Thirty members actively participated in the discussion.



Lecture given by Dr Dinesh Ekambaram on Obesity in CME "Gut Feeling" at KMA hall...

Session chaired by Society of Anaesthesiologists, Kolhapur President Dr Sangita Patil and SAK member Dr. Shilpa Patil.

28th April 2024



ISA Visakhapatnam city branch & Society of Defence Anaesthesiologists

29th May 2024

A monthly academic meet was conducted on 29th May at the conference hall INHS Kalyani. It was attended by 90 members.



Report on the Annual Conference of The Society of Defence Anaesthesiologists (SDA)

The SDA under the aegis of ISA celebrated its annual conference in virtual mode on 28th April, 2024. The conference began with the encouraging speeches from Maj. Gen Shivinder Singh, President SDA and Maj. Gen DK Sreevastava, Past President SDA. These were followed by words of wisdom from Dr. JV Divatia, President ISA and Dr. SJS Bajwa, Hony Secretary, ISA. The major attractions of the conference included sharing the achievements and activities done by SDA members. The newsletter of SDA was also released on this occasion by Maj Gen Shivinder Singh, President SDA. The stalwarts in this field actively participated in the conference and delivered key messages. SDA Vice-President, Brig. Rahul Yadav highlighted about the future prospects and endeavours of the society. The vote of thanks was delivered by Maj. Gen B C Nambiar. The programme concluded with the unfolding of the journey of SDA so far in the form of a slideshow.

ISA TRIVANDRUM BRANCH

24th MAY 2024

ISA Trivandrum city branch has given endorsement for the ISNACC National Neuro Anaesthesia conference, scheduled to be held in January 2025. A general body meeting was held and lectures were delivered by Dr Revikrishnan S and Dr Unnikrishnan. The occasion was graced by Dr B.Radhakrishnan, Past National President – ISA and Prof. Dr Linnet J Morris, Principal and ex HOD, Trivandrum Medical College.



05 June, 2024

ISA NATIONAL ESSAY CONTEST CLIMATE CHANGE AND ANAESTHESIOLOGIST

Primary Jury

Dr. Swati Jindal, Chandigarh
Dr. Gauri Gangakhedkar, Mumbai
Dr. Vedhika Shanker, Mumbai
Dr Pradeep Dongare, Kalaburgi
Dr Sudheesh Kannan, Bengaluru
Dr Nishant Kumar, New Delhi

Final Jury

Dr. Abhijit Nair, Oman
Dr. Karunakaran Ramaswamy, Qatar
Lt. Col. Shibu Sasidharan, UK
Dr. Indrani Hemantkumar, Mumbai
Dr. Namrata Biswas, Kolkata

**Blinding of essays, coding and liason with juries and final unblinding
co-ordinated by Dr. Vinothkumar SP from Coimbatore**

ISA National Essay Contest First/ Second/ Third prize (Category A)

- **Category A : Age $\leq$ 35 years – 282 entries**

- **1st Prize – Dr. Rosy Jacob, Kochi**

“CODE GREEN : Anaesthesiologists- From clinicians to climate change warriors”

- **2nd Prize – Dr. Chaithali Hebri, Bengaluru**

“Driving Sustainability –The Anaesthesia way...”

- **3rd Prize – Dr. Priyanka Mishra, Dehradun**

“Beyond the drapes- Navigating anaesthesia in a warming world”

OTHER TOP ESSAYS OF THE CATEGORY A

1. Dr. Shyama C Shyam Sunder, S7972/A, Chennai
2. Dr. R. Mithra, M3433/A, Chennai
3. Dr. Nikita Vipul, N1875/A, Surajpur
4. Dr. Anu Mathew, A4698/A, Kozhikode
5. Dr. Reethu Jayaprasad, R4114, Bangalore
6. Dr. Gowtham Krishna J, G1406/A, Chennai
7. Dr. Kaizeen Daruwalla, K2611, Mumbai

ISA National Essay Contest

First/ Second/ Third prize (Category B)

- **Category B : Age >35 years - 220 entries**

- **1st Prize - Dr. Bhavna Gupta, Dehradun**

“Green (OR) Revolution- Anaesthesiologists as Climate Change Leaders”

- **2nd Prize - Dr. Vrinda Oza, Rajkot**

“Global Warming: The Last Warning! Moving towards Green Anaesthesia for sustainable future”

- **3rd Prize - Dr. Santosh Kumar Sharma, Gorakhpur**

“Global knock Out: Induction to Extinction?! -Time to reduce the Anaesthesiologists’ carbon footprint”

OTHER TOP ESSAYS OF CATEGORY B

1. Dr Abdul Nasser, N1912, Mumbai
2. Dr Neelkant Raju R, N2216/A, Guntur
3. Dr R Aishwarya, A 2874, Chennai
4. Dr Nilesh Naphade, N1242, Ratnagiri, Maharashtra
5. Dr Chhavvi Sawhney, C0364, New Delhi
6. Dr Joanna Samantha Rodrigues, AP019097, Mumbai
7. Dr Divya Mahajan, D1515, Kanpur
8. Dr Shagun Bhatia Shah, S2746, New Delhi

Anaesthesiologists- From clinicians to climate change warriors.

Dr. Rosy Jacob

Kochi, Kerala

ISA No. R1367

ISA National Essay Contest

1st Prize (Category A)



This summer, temperatures have skyrocketed. While the rest of your community has to bear the intolerable heat and humidity; as anaesthesiologists, you get to escape into the '21+/-3°C' cool of the operating room and congratulate yourself on choosing a specialty that affords you such a luxury.

While 'chilling' and 'scrolling' in the OR as we anaesthesiologists tend to do, we often come across statistics saying that if healthcare were a country, it would be the 5th largest emitter of green house gases. Healthcare especially anaesthesiology, has a large carbon footprint.

Data tells us that using Desflurane for an hour is the CO₂e of driving a car for 200-400kms or that the drugs you recklessly discard can end up bioaccumulating in the aquatic ecosystem.

This information is usually relegated to textbooks and scientific forums. As young anaesthesiologists, we have firsthand knowledge of the effects of climate change- erratic weather, worsening air quality, rising pulmonary pathologies, recovery from a global pandemic and a potentially bleak future. As teachers of tomorrow, 'Yuva' anaesthesiologists and those in-training are perfectly poised to transform the science into a skill.

Dissing the Des, Nixing the Nitrous

Volatile gases have been the mainstay of anaesthetic practice since the demonstration of Ether in 1846. Anaesthetic gases make up 5% of the carbon footprint attributed to global healthcare. This is such a small number, one

might think; until one realizes that it far exceeds the contribution of the aviation and shipping industries combined. The fact that the annual greenhouse gas production by the health care industry is equivalent to five hundred and fourteen coal plants is alarming; albeit more alarming is the fact that these gases tend to stay in the atmosphere for a long time- a very long time. Having an atmospheric lifetime of a hundred and fourteen years, nitrous oxide tops the 'naughty list'. It is not just their lifespans that are concerning; it is also their global warming potential- the ability to absorb heat, destroy the ozone and alter climate. All of which Desflurane has been found guilty of.

For almost two centuries, the use of anaesthetic gases has dictated the way we practice, despite the advent of sustainable alternatives in the recent years. With the advancement of technology and ultrasound imaging; regional anaesthesia techniques have gained popularity. Attractive not just for its reduced incidence of post operative pulmonary complications, shorter hospital stays and excellent analgesia, it also has the added advantage of being ecofriendly. A combination of regional blocks with inhalational agents can also significantly lower the use of such agents. Total Intravenous Anaesthesia (TIVA) is another good alternative with amazing results. TIVA using propofol has been found to have a carbon footprint four times less than that of the conventional inhalational method even after taking into account the plastic tubing, syringes and pump used in TIVA.

Breaking the habit of a lifetime can be difficult. One might argue that RA can never replace GA. Perhaps this is true today. Until a time technology offers a sustainable replacement to volatile anesthetics, we can always start small—using inhalational agents with a lower GWP100 like Sevoflurane, actively going low flow and saying ‘Yes’ to scavenging.

All wrapped up.

Every day we discard tonnes of packaging and it is quite literally an ‘unboxing’ that occurs in the OR. Some of the fancy, superfluous and frankly unnecessary plastic and paper packaging can be done away with if we order our supplies in bulk or in blister packs.

Greener packaging options like compostable plastic and recycled paper are up for grabs in the market. Drug information sheets, workstation and equipment user manuals can easily be made available online by scanning a QR code on the product.

Practicing paperless record keeping in the hospital, making available relevant medical information like discharge summaries, laboratory investigations and after care instructions online is another commendable green action.

Vocal for local.

Creating virtual pre anaesthetic clinics with the option for teleconsultation for patients scheduled for surgery, can drastically bring down transport costs. Rather than burning gas to reach your institute for laboratory investigations, encourage patients to do the same at their local laboratory.

Freight and shipping costs and in turn hospital costs can be lowered if we source our products from local vendors. ‘Made in India’ products are just as good as their international counterparts plus they lack a lofty price tag.

Watt an idea!

Wouldn’t it be wonderful if we could cut down on our fuel consumption by riding the metro or carpooling to work, choosing to cycle or even consider investing in an electric or hybrid vehicle? At the end of a long day, walking out of the OR after switching off the lights, the air-conditioning, the personal computers, the scavenging and your workstation enjoying that tiny rush of satisfaction knowing that you just did a good deed—makes it well worth it.

Frequent upkeep, upgradation, gentle handling and timely maintenance can make our equipment go a long way rather than ending up in a landfill as E- waste. Installing LED surgical lights, solar panels and monitoring energy expenditure in the OR can keep costs down. These energy saving measures can be replicated even in a resource poor setting.

Waste not, want not.

A minor procedure like cataract surgery can generate waste equivalent to 6kg CO₂e in our country. The pandemic opened our eyes to the horrors of waste being generated in our hospitals in the form of single use devices and personal protective equipment. Post pandemic, there hasn’t been any actionable measures or discernable change. It’s time to fight the move to use single use devices as the evidence supporting them is poor but that against them is enormous. Say ‘No’ to disposable laryngoscope blades and don’t bin those supraglottic airway devices just yet. Reprocess your single use devices—by cleaning your blades with an alcohol wipe and by sterilizing your SGADs.

Drawing up drugs prior to surgery just because you think ‘you might need them’, only to discard them later unused, is wasteful. Rather than dumping your garbage willy nilly in the OR, make sure it hits the right bin. Waste segregation is the cornerstone of waste

management. Switching to reusable surgical linen, reusable sharps' container and packaging surgical kits in hard cases can go a long way in reducing waste.

A stitch in time.

Pre operative optimization of patients scheduled for elective surgery, done in advance can prevent wastage of resources and unnecessary cancellations. The 'just in time' model advocates reformulating surgical packs to avoid redundancy, opening packs in time to prevent wastage and prompt surgical safety checklists to remain error free.

A paradigm shift in anaesthesia practice came with development of Enhanced Recovery After Surgery protocols- fast tracking surgery, recovery and discharge. Early ambulation and early initiation of feeding translates into a switch from intravenous drugs and their associated delivery systems to per oral formulations. Routine microbial cultures in the OR and ICU to develop an institutional antibiogram, prompt de-escalation and timely antibiotic holidays makes for responsible antibiotic stewardship, an integral part of sustainable health care.

#GREEN ANAESTHESIA

A couple of questions on a recent anaesthesiology examination and a departmental training programme to earn the Bureau Veritas instituted 'Green OT' certification; made this author aware of the climate crisis and how anaesthesia is a major stakeholder.

Climate change and sustainable anaesthesia should be made a part of the teaching curriculum. Awareness can be created through the simplest of means like a sticker on your Desflurane vaporizer that reads 'Global warming begins with this vaporizer'- giving pause before its usage.

Who doesn't love a good reel. The social media savvy anesthesiologist can make '#green anaesthesia' trending again. There will come a time when the eco conscious patient demands an anaesthetic technique with a lower carbon footprint and as anaesthesiologists we must be ready to face that day.

Indians do love competition. Apps like the Anaesthesia Impact calculator allow the user to track their anaesthetic gas usage. Creating leaderboards and tracking your peers' efforts in improving the environment is the greatest motivation you will need. Universal standards and 'green' certifications must be made mandatory for all hospitals. Institutions should be encouraged to publish their yearly greenhouse gas emissions and incentivized for environment friendly results and initiatives.

Academic grants and financial funding should be earmarked for research on development of greener devices, anaesthesia gas reclamation, fluid waste disposal and low-cost solutions for the climate crisis.

One small step for man, one giant leap for mankind.

Changing the system overnight is impossible. We can't all be Greta Thunberg and take the world by storm. What we can do is Reduce, Reuse, Research, Rethink, Recycle and what this author would like to propose- the 6th R- Remember.

Remember- in the battle against climate change- no idea is unremarkable; no endeavor is insignificant. Anaesthesiologists pride themselves on being multitaskers. Remember - you are an ecowarrior as well. Remember- the journey to Carbon Net Zero begins with you!

Driving Sustainability –The Anaesthesia way

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ISA National Essay Contest

2nd Prize (Category A)



Climate change is defined as a long-term shift in global or regional climatic patterns. It predominantly refers to the rise in global temperatures from mid-20th century to present. Earth's temperature increases every year and the rate of increase has doubled since the year 1981 on an average rate of 0.18 degree centigrade per decade.

The impact of climate changes are known to adversely affect human health, both physically and mentally, especially vulnerable ones such as older people or children face increased risk of infections and exacerbated non-communicable diseases as well. Therefore it is the need of the hour to minimise the negative impacts of climate hazards on population health and to make a climate-resilient health care system.

The healthcare system is one of the major contributors of pollution which accounts for nearly 5% of global greenhouse gas (GAG) emissions. Though the core mission is to support health and healing, paradoxically has become a significant contributor to global pollution and climate change. According to The Hippocratic oath, First do no harm guides physician practice, yet healthcare system itself pollutes the environment.

In the world more than 250 million surgeries are performed under general anaesthesia and Inhaled anaesthetic gases (IAG) contributes substantially to GHG emissions. GHG emissions are a major causative factor of global warming and climatic change. As a result of GHGs, the

the hole in the ozone layer which is above Antarctica is increasing. The Montreal protocol which is formed in the year 1987 was aimed at stopping chlorofluorocarbon. Hydrofluorocarbons were targeted next in the Kigali amendment in 2016. IAGs usage was not restricted by the protocol because of medical needs.

Thus, anaesthesiologists carry ethical responsibility to prevent environmental pollution apart from ensuring patient safety during surgeries.

The preoperative setting has emerged as a crucial area for decreasing the environmental footprint. Health care procurement revolves around cost-effectiveness. This primacy tends to mask the thought of long-term environmental implications associated with purchasing pharmaceuticals and medical equipment with lower initial costs. The fundamentals of understanding a product's impact to environment lies in the Life cycle assessment (LCA) methodology. It is pivotal in gauging its impact on the environment from creation to disposal. LCA facilitates by integrating life cycle costing into procurement strategies.

There are lot of barriers which hinder effective sustainability practices such as limited support from hospital leadership, inadequate knowledge levels, dispassionate staff attitudes, and poor recycling facilities. Insufficient optimisation of a patient's health prior to surgery leads to longer hospital stays

and increased use of resources which in turn leads to higher energy consumption, greater waste generation, and elevated emissions which contribute to environmental strain.

Increasing awareness and offering structured training are important components for achieving sustainability in the environment. Forming a 'green team' with all the health care professional and support staff plays an important role in achieving sustainability. Hospitals can encourage staffs and patients to use eco-friendly means of transportation to reduce carbon emissions.

In the intraoperative setting, IAGs have an impact on the climate through multiple pathways. They play a role in exacerbating global warming and in contributing to ozone layer depletion. The measurement of their influence is often quantified using the concept of Global Warming Potential (GWP). All inhaled anaesthetics in itself are potent greenhouse gases with heat global warming potential which is greater than that of carbon dioxide.

Mask induction of anaesthesia is done in paediatric patients, high flows are used to ease rapid changes in inspired sevoflurane concentration during induction. This leads to a large amount of waste anaesthetic gases (WAG). Fresh gas flows (FGF) should not be kept more than 5 to 8 L/min initially during mask induction and should be decreased when uptake has been slowed.

When IAG is used during induction, it is preferable to turn off FGF during intubation and leave the vaporizer at its set point than to turn off the vaporizer and leave FGF flowing. This avoids environmental contamination during intubation and a lower FGF is required to maintain circuit concentration after intubation. With circuit disconnected and leaving FGF on allows washout of IAG from the circuit into the room and requires the reestablishment of IAG in the circuit once the circuit is connected again. WAGs are released unregulated, unmetabolised and vented to the atmosphere. Low flow anaesthesia is a safe, efficient and dependable

means to decrease WAGs.

Among intravenous anaesthetic agents, Propofol is the most utilised and wasted drugs in anaesthesia. It has a persistence, bioaccumulation and toxicity (PBT) index of 9. It is resistant to biodegradation in water, inhibits algae growth and is toxic to aquatic organisms.

Even before patient enters the operation room 80% of solid waste is produced which includes plastic packaging of surgical and anaesthesia equipment. Since the COVID-19 era, use of disposable single-use equipment such as laryngoscope blades, supraglottic airway devices, facemasks, circuits has increased which are made from various plastic materials. The life cycle of these plastic materials impose considerable harm on the environment and sustaining GHG emissions.

Sustainability in anaesthesia addresses the substantial energy demands in operating rooms. Procuring electricity through hydroelectric source is cleaner than obtaining it from coal.

Practicing sustainable perioperative practices, which all anaesthetists should follow for a green environment are the use of the 6Rs (Rethink, Refuse, Reduce, Reuse, Recycle, and Research).

Rethink

As greenhouse effect is associated with IAG, reviewing of these agents is important. Opting for IAG with lower Global warming potential (GWP100) becomes a responsibility to alleviate environmental impact while ensuring patient safety during anaesthesia. The carbon dioxide equivalent emissions can be expressed as equivalent distance driven. Using low flow anaesthesia with (1 L per min) with desflurane and N₂O is almost like driving more than 1000km per day. This is the reason to minimise inhalation anaesthesia. One MAC-hour 2.2% sevoflurane, 1.2% isoflurane, 6.6% desflurane, at 1 L per min fresh gas flow with sevoflurane is equivalent

to driving 6.5 km, isoflurane 13 km and desflurane 300 km. The safe, and effective measures that anaesthetists can take individually to reduce their carbon dioxide equivalent are to: firstly to avoid desflurane and N₂O, practicing low-flow anaesthesia, and adopt techniques to decrease use of inhalation agents, such as regional and total intravenous anaesthesia (TIVA).

Regional anaesthesia should be the primary anaesthesia technique whenever possible. Practice of low-flow anaesthesia with the appropriate equipment and monitoring. To reduce carbon footprint reducing single use plastics and use energy efficient methods to be chosen. Disabling old, and avoid new construction central pipe line system for N₂O.

Refuse

Nitrous oxide causes the ozone layer depletion. It remains prevalent in our practice as it is effective in reducing volatile agent usage for anaesthesia. So use of it has to be limited. This can be overcome by BIS guided adjusting the drug consumption. This approach enhances patient safety and decreases volatile agent administration.

Reduce and recycle

Plastics are non-biodegradable and non-recycleable, so it is necessary to minimize usage. Greener packaging materials could be suggested to the manufacturers to reduce solid waste. Recycle waste products in the hospital.

Reuse

It is a delicate balance to achieve between infection control and reduction of carbon footprint while choosing single use versus reusable products. LCA of equipment's such as Supraglottic airway devices and anaesthetic drug trays showed that reusing them leads to lower carbon footprints.

Research

Venting of IAG to the atmosphere can be minimized via WAG capture and destruction technologies. These techniques adsorb WAG onto activated charcoal or a selective adsorbent, or condensation of IAG to a liquid. BlueZone Delta (Toronto) uses a reversible adsorbent technique to capture WAG and allows for either destruction or reprocessing. Innovations such as CONTRAfluran (ZEOZYS, Luckenwalde, Germany) aims to capture 99% of waste exhaled anaesthetic gases, with the aim of recycling them after treatment at assigned facilities. But these techniques are yet to be approved by the FDA. N₂O can be destroyed by oxidation, reduction and catalytic splitting. This technique is performed in Sweden.

In conclusion, health care personnel and support staff play a crucial role in maintaining sustainability. Anaesthesiologists have an ethical obligation and responsibility to practice green anaesthesia by integrating sustainability practices. Our healthcare system should present an opportunity to reduce the carbon footprint without compromising quality. Supporting collaborative initiatives along with embracing the 6Rs in our practice can facilitate for a more sustainable future. We as anaesthesiologists should diligently frontline hospital green teams and leverage our clinical skill to start recycling programs and execute sustainable waste management practices.

Beyond the drapes– Navigating anaesthesia in a warming world

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3rd Prize (Category A)



“Most human beings have an almost infinite capacity for taking things for granted”. These words by Aldous Huxley, ring with the harsh truth of human nature and choices. Earth is a living entity, with an ever-changing and evolving climate- owing to both natural and human activities. The biological and ecological balance of the earth is getting drastically disturbed. The consequence is what global media has been announcing again and again, spanning from soaring earth’s temperature, changing monsoon patterns (like recent floods in the desert and arid regions of the Middle East), melting glaciers, unprecedented storms, volcanic eruptions, tsunamis, spread of infectious diseases, loss of biodiversity and many more. While technology and inventions moving ahead leaps and bounds, create room for optimism, human inertia, and political challenges stand steadfast in the path of a safer and happier earth. It has taken a considerable time to get the planet into its current perilous state, and there is no denying that it is going to claim unknown time to “sail safely from these treacherous waters.” Probably seeming unrelated to the general masses, anaesthesia and climate change intersect in surprising manners. With this being said, it is imperative to acknowledge, learn and act upon the carbon footprint of the daily choices in anaesthesia and adjust our clinical practice to minimize the impact.

ANESTHETIC PARADOX

The great irony of healthcare is that in striving to improve global health, the healthcare system itself contributes significantly to climate change, which ultimately negatively affects human well-being, health, and healing. Global healthcare has been deemed as the world's fifth largest emitter of greenhouse gases (GHG). (1) Anesthetic gases, intravenous agents, and related medical supplies contribute significantly to the overall problem. Anaesthesiology has an oversized role in the production of greenhouse gases and waste, and this is in turn reciprocated, in its impact on climate change. The silent emissions of Nitrous oxide (N₂O), volatile anesthetic agents (like Desflurane, Sevoflurane, and Isoflurane), discarded medicines, single-use devices (like endotracheal tubes, disposable laryngoscopes, etc.), syringes and empty vials, all cast a cumulative impact. It would not be an exaggeration to say that each surgery while attempting to improve individual health, adds to the atmospheric plight.

THE NUMBERS SPEAK

The Operating rooms (OR) generate up to 20–30% of hospital waste and anaesthetic gases alone account for 2–4% of the total impact as per scientific evidence. (2) Nitrous oxide in addition to being a GHG, also depletes ozone, while persisting in the atmosphere for even more than 100 years.

The spectra of estimated tropospheric (atmospheric) lifetimes of the anesthetics range from 1.2 years for sevoflurane, 3.6 years for isoflurane, and over 10 years for desflurane. Considering the carbon footprint of these volatile agents, the global warming potential (GWP100) values are 130 for sevoflurane, 290 for nitrous, 510 for isoflurane, and 2540 for desflurane. (3) To simplify, a two-hour anaesthesia with desflurane (with a fresh gas flow of 1L/min) releases GHG equivalent to a car driving for 608km, roughly the distance from Mumbai in Maharashtra to Hyderabad in Andhra Pradesh. These numbers strongly highlight that the choice and flow of anaesthesia have a huge impact in determining the carbon footprint of anaesthesia. This also underscores a major reason for desflurane losing its popularity. Data suggests that sevoflurane is tremendously less detrimental to the atmosphere than desflurane, however, it still results in nearly 135 times greater emissions in comparison with using propofol (roughly 1600 gCO₂e versus roughly 12 gCO₂e respectively). (4)

A CALL TO ACTION

The burning question we face is “Will we continue to deceptively prioritize individual health over the health of our planet, or will we rise to the challenge and redefine health in terms of sustainability?” The recent history showcases the global acknowledgment of proactive measures intended to save climate disasters. Media is buzzing nonstop with repeated disaster warnings and activists are mobilizing throughout the world for greater action against climate change. There are several key developments in global environmental diplomacy. Some of them include the Montreal protocol (1987), Kyoto protocol (2005), Kigali amendment (2016) and COP26 meeting (2021) etc. (4) World Health Organisation in alliance with United Nations has adopted various strategies and programs as a collective effort to integrate

environmental sustainability into the health care industry. When it comes to anaesthesia practice, recommendations are being put forward, but there is tremendous scope for further research to guide our future choices and practices. We need to understand and live the idea of “Not to be intimidated by what we think we can't do, but rather do what we can”. It's time to make ‘better choices’ rather than fixating on ‘finding the solutions’.

THE ROADMAP TO CHANGE

The 5R's of waste minimization in anaesthesia, namely- Reduce, Reuse, Recycle, Rethink, and Research, can effectively lend a hand in curtailing the environmental impact of the anaesthesiology practice. Anaesthesia sustainability initiatives while decreasing the carbon footprint of the OR, also curb financial costs. This concept is appealing not only to the clinician's individual sense of responsibility but also to the communal duty to improve global health.

Some of the most effective methods to reduce the anesthetic ecological footprint include-

- a) **TIVA (Total intravenous anaesthesia) and Regional Anaesthesia should be encouraged instead of inhalational anesthetics** whenever feasible.
- b) **A cautious choice of volatile anesthetic agent and lower fresh gas flow.** It has been established that judicious selection of the use of anesthetic gas agents and low gas flows can reduce CO₂ equivalent emissions by 64%. This relates to avoiding Desflurane and Nitrous oxide when using inhaled anaesthesia.
- c) **Turning off FGF while intubation, the circuit changes,** leaving the volatile agent vapouriser at set point to avoid any OR contamination. Efficient gas flow management reduces non-scavenged anesthetic gas significantly and curtails the volatile agent consumption by nearly one-fifth.

d) Utilisation of [pre-filled syringes for emergency medications](#) can contribute to waste reduction.

e) [Avoid loading all anticipated medications](#), but keep them readily available in case of need.

f) [Utilising smaller vials for short procedures or pediatric patients](#). This can be well understood by the data stating that a simple change in the size of vials of propofol, led to a 90% reduction in this wasted, nonbiodegradable, environmentally toxic agent. (5)

g) Use supply chain data to determine the costs of single-use devices used in practice and analyze and adopt the cost savings associated with [switching to reusable devices](#).

h) Follow the controlled substances waste stream to [ensure that these medications are not being disposed of by sewer](#).

i) Implement a [reprocessing program](#) to decrease waste and costs. Plastics and microplastics have unfortunately become ubiquitous in our environment. Data indicates that around 6 million tonnes of plastic waste is generated annually by hospitals within the United States alone.

j) Hospitals consume tremendous amounts of energy. Unoccupied set-back of air treatment systems can save up to 70% of energy. [Decreasing the air changes per hour in the OR during unoccupied times](#) can contribute to saving energy.

k) Enquire into the [HVAC \(Heating, ventilation, and air conditioning\) controls](#) for OT (which are generally accounting for up to 90–99% of the hospital energy demand).

l) The technology of [anesthetic gas recapture](#)

is also being explored, but with considerable cost expenses and still limited environmental benefit.

m) A [regulatory framework of standardized, mandatory reporting and accountability of hospital waste, and energy utilization](#) is critical to achieving widespread engagement.

To conclude, let us all remember that our choices and actions send ripples far beyond the drapes. We can empower the primordial event of the “Butterfly effect”. The intricate relationship between climate change and anaesthesia is a poignant reminder of the interconnectedness of environmental health and human health. As we stand at the crossroads of innovation and tradition, we must choose the path of sustainability. By acknowledging our anesthetic footprints and embracing eco-conscious practices, we can be compassionate healers not only for the patients, but also for the Earth.

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Green (OR) Revolution-

“Anaesthesiologists as Climate Change Leaders”

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ISA No. B1501

ISA National Essay Contest

1st Prize (Category B)



Introduction

Climate change has emerged as one of the most pressing global challenges, impacting various facets of human life, including healthcare. As a result of human activities, burning of fossil fuels, deforestation, and industrialization, Earth's eco-system is undergoing unprecedented changes, with far-reaching impacts on- climate, economies, and societies worldwide. [1]

Anaesthesiology, while indispensable in modern healthcare, is not exempt from its contributions to climate change. The use of anaesthesia gases, particularly potent greenhouse gases is a significant factor in carbon footprint, contributing to global warming and environmental degradation.

Rising impact of climate-change

Climate-change manifests in several ways that directly affect patient care and healthcare delivery. For instance, increased frequency and intensity of extreme weather events due to climate-change can disrupt medical supply chains, leading to shortages of essential supplies. Additionally, rising temperatures and heatwaves pose challenges for maintaining optimal Operating Room (OR) conditions, affecting patient-safety and procedural outcomes. Changes in disease patterns, such as spread of vector-borne diseases in response to shifting climate zones, also impact peri-operative care. These challenges highlight need or anaesthesiologists to be cognizant of environmental factors that influence their

Planetary Health Checkup- Need of hour!

The concept of planetary health has been highlighted by-“Centre for Nature and Climate”[2] reflects- interconnectedness of human health with health of the planet. In anaesthesiology, a planetary health checkup assesses the environmental impact of anaesthesia practices, with a focus on mitigating factors contributing to climate change. This includes addressing the impact of anaesthetic gases on carbon footprint and exploring ways to reduce anaesthesia's environmental impacts [3]

Climate Change Aware Institution:

Sensitizing anaesthesiologists to environmental impact of their practices is crucial for promoting sustainable healthcare. Recently, we had privilege of hosting a conference aimed at sensitizing our post- graduate residents and faculties about profound impact of climate-change at our tertiary-care-setup.[figure-1]. During the conference, we not only raised awareness but also engaged participants in discussions to brainstorm and propose solutions to environmental challenges posed by health care practices. [figure:2-3]

Global Health Resilience: By addressing interconnectedness of human, animal, and environmental health, “One Health approach” can contribute to global health resilience. Anaesthesiologists can advocate for policies and practices that promote sustainable healthcare, biodiversity conservation, and prevention of emerging infectious diseases, enabling a “healthier planet for all”.[figures 4-7]

"Green OR Revolution"

At healthcare institutions, "Green OR Revolution" program can be implemented to integrate sustainability into anaesthesia practices, focussing on various aspects including:

Inhalational Gases Management: Emphasis on use of low-flow anaesthesia, regional anaesthesia or innovations to reduce consumption of anaesthesia gases.

Smart ORs- Smart OR designs with energy-efficient lighting, heating, and cooling systems can not only reduce carbon emissions but also lead to substantial cost savings for healthcare institutions, by collaborating with administrators and engineers to implement these sustainable solutions.[figure-9]

Education and Training: Anaesthesia providers can be trained on sustainable practices, environmental stewardship, importance of reducing healthcare's carbon footprint, monitor gas emissions, optimize gas delivery, minimizing environmental impact and greenhouse gas emissions.[figure-2-3]

Optimizing Drug Usage: Precise dosing, minimizing drug wastage, and exploring alternatives with lower environmental footprints.

Alternative Energy Sources: Integration of renewable energy sources, such as solar panels or geothermal systems, to power medical equipment in ORs, reducing reliance on traditional energy sources.[figure-7]

Virtual Consultations and Telemedicine:- Promoting telemedicine and virtual consultations for pre- operative assessments and follow-ups can reduce need for patient travel, lowering carbon emissions associated with transportation.[figure-8]

Green Anaesthesia Kits:- Designing and promoting green anaesthesia kits that include reusable or recyclable components can significantly reduce plastic waste generated during surgical procedures.

Green Procurement Policies:- Advocating for green procurement policies within healthcare institutions can ensure that products and supplies used in the OR, such as anaesthetic drugs, equipment, and consumables, meet eco-friendly standards.

Energy-Efficient Equipment:- Encourage use of energy-efficient anaesthesia machines, monitors, and other medical equipment that consume less power and contribute to overall energy savings.

Green Anaesthesia Workflows:- Develop and implement standardized green-anaesthesia-workflows that emphasize minimal resource usage, optimized patient outcomes, and reduced environmental impact, developing-protocols for gas scavenging, waste-reduction, and energy conservation.

Remote Monitoring and Automation:- Utilising technology for remote monitoring of patients' vital signs during surgeries can reduce need for constant physical presence in the OR, leading to energy savings and automation of equipment to optimize energy usage can also be explored. [figure-9]

Lifecycle Assessments:- Conducting lifecycle assessments of medical equipment and supplies used in the OR to identify opportunities for reducing environmental impact, such as choosing products with lower carbon footprints or longer lifespan, can guide procurement decisions.

Green Anaesthesia Documentation:- Implementing electronic anaesthesia documentation systems not only improves efficiency but also reduces paper usage and waste. These systems can also integrate environmental impact tracking features to monitor resource consumption.

OR Waste Reduction:- Strategies to minimize waste generation in ORs, including implementation of recycling programs for materials (plastics/ metals), proper disposal of hazardous waste, and adoption of biodegradable products where feasible.

Recycling and Waste Management:-Anaesthesiologists can collaborate with hospital waste management teams to implement efficient recycling programs for materials like plastics, paper, and metal used in OR.

Sustainable Supply Chains:-Advocate for sustainable supply chains within healthcare, ensuring that suppliers prioritize environmentally friendly materials, packaging, and manufacturing processes for medical supplies and equipment.

Green Cleaning Practices:-Collaborate with hospital cleaning staff to adopt eco-friendly cleaning products and practices, including biodegradable disinfectants, reducing water usage during cleaning, and proper disposal of cleaning waste.

Organic farming:-Sustainable land use and agriculture practices, supporting local and organic food sourcing reduces the carbon footprint.[fig4-6]

Robotic surgeries:-Robotic systems are designed to be energy-efficient, more precise and accurate procedures, fewer complications, reduced need for additional surgeries, and consuming less power compared to traditional surgical equipment.[Figure-9]

Patient Education:-Educate patients undergoing surgery about environmental impact of healthcare and encourage them to participate in sustainable practices, such as donating unused medical supplies, opting for digital records, and choosing eco-friendly treatment options.

Educational-Campaigns:-specifically tailored for anaesthesiologists and OR staff can raise awareness, share best practices, and encourage sustainable behaviours in daily clinical operations.

Partnerships with Environmental Organizations:-focused on sustainable healthcare can provide anaesthesiologists with access to resources, expertise, and networking opportunities to further their sustainability efforts.

Collaborative Research Initiatives:-Anaesthesiologists can collaborate with researchers to develop and implement sustainable technologies, such as biodegradable anaesthetic packaging or eco-friendly anaesthesia machines.

Water Conservation: -Implementing water-saving measures in the OR, equipment cleaning and minimizing water usage during surgical procedures.

Continuous Monitoring & Improvement:-to track environmental metrics like-waste generation, energy consumption, and carbon emissions, allowing for continuous improvement and goal setting in sustainability initiatives.

Climate resilient infrastructure:- Designing buildings with energy-efficient features, implementing water conservation measures, and incorporating green spaces, climate-resilient infrastructure to withstand extreme weather events and other climate-related challenges.

Collaboration with professional organizations and societies especially Indian Society of Anaesthesiologists (ISA) is essential for promoting sustainable practices[4] These collaborations can facilitate discussions, webinars, and workshops on sustainable anaesthesia practices, providing a platform for knowledge exchange and sharing best practices. They can also advocate for policy changes and guidelines that prioritize environmental sustainability.

Expected outcomes of "Green OR Revolution"

Reduced Environmental Footprint: substantial decrease in OR's environmental footprint, reduced greenhouse gas emissions, water usage, and waste generation.

Cost Savings: through reduced energy consumption, waste management costs, and procurement of eco-friendly supplies.

Improved Patient Safety and Outcomes: Green anaesthesia workflows and technologies focused on patient-centric care not only benefit environment but also enhance patient safety, comfort, and outcomes.

Improved Patient Safety and Outcomes: Green anaesthesia workflows and technologies focused on patient-centric care not only benefit environment but also enhance patient safety, comfort, and outcomes.

Enhanced Reputation: Adopting sustainable healthcare practices can enhance reputation of healthcare institutions and anaesthesiologists as responsible stewards of environment.

Compliance with Regulatory Standards: By proactively implementing green practices, anaesthesiologists can ensure compliance with regulatory requirements.

Global Health Impact: Sustainable healthcare practices have a broader global health impact by contributing to mitigating climate change, reducing pollution, conserving resources, and promoting health equity.

Anaesthesiologists as climate change leaders

Anaesthesiologists can lead by example by adopting sustainable practices in their own clinical work, encouraging colleagues to do same, and sharing success stories and best practices with the broader healthcare family.

Conclusion:

Climate change presents complex challenges for healthcare, necessitating active involvement of all healthcare professionals, including anaesthesiologists. A holistic approach that integrates planetary health checkups, sensitization of doctors, prioritizing environmental stewardship, adopting green anaesthesia protocols, and engaging in ongoing education and advocacy efforts, can contribute significantly to global efforts to address climate change and build a healthier, more sustainable future.



Figure-2 Participatory discussions during climate change program



Figure-3 Climate is changing, so should we!!



Figure-6 Cycling to reduce carbon-foot-print



Figure-4 Indigenous concept of organic farming



Figure-7 Solar panels at-roof and Greenery all around



Figure-5 Green Campus



Figure 8 - Teleconsultations



Figure-9 - Automated Robots in Green OT

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Global Warming: The Last Warning! Moving towards Green Anaesthesia for sustainable future

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2nd Prize (Category B)



Climate change and global warming are the serious health threats due to human activities. Health care services especially acute care setting is the chief contributor of carbon generation contributing to 8% of national greenhouse gas (GHG) emissions. Anaesthesiology is an essential component of modern healthcare enabling surgical procedures and includes critical care, pain medicine. Since anaesthetic gases, drugs and equipment contribute to carbon foot print of healthcare practice, it is our ethical obligation to ensure safety and wellbeing of our patients and minimise the harmful impact of our practice on environment by utilizing more environmentally sustainable anaesthesia practices.

Inhalational anaesthetics such as desflurane, sevoflurane, and nitrous oxide, are potent greenhouse gases trap the heat in the atmosphere and warm the planet and contributing to global warming. These agents are very barely metabolised in the body and prolonged accumulation leads to formation of waste anaesthetic gases. The global warming potential (GWP) is a metric used in national and international agreements to assess the potential contribution of a GHG to its lifetime in the atmosphere and causing climate change. Desflurane has a GWP 20 times higher than carbon dioxide per unit mass i.e. around 2540 and it takes 14 years for it to break down. Nitrous oxide is even more potent, with a global warming potential around 300 times that of carbon dioxide. The current contribution of n₂O from anaesthesia to the radioactive forcing of

climate is difficult to estimate, however 1-3% of total global emissions of N₂O is attributed to anaesthesia use and it stays in the atmosphere for approximately 150 years. Carbon credits is a generic term used to reduce the CO₂ and others GHGs emission from activities that generate them as byproduct. Also, chlorine containing substances isoflurane, methoxyflurane and n₂O are ozone depleting substances. The ozone depleting potential (ODP) is used to compare the effectiveness of one mass unit of a substance in destroying ozone relative to that of trichlorofluoromethane (CCl₃F). Isoflurane, sevoflurane and desflurane lead to formation of trifluoroacetic acid through atmospheric gas and heterogenous processes. Trifluoroacetic acid is neither bio-accumulative nor toxic, but it is persistent as waste anaesthetic gases are emitted freely to the outdoor atmosphere, either by medical gas evacuation systems or unscavenged gas exhaled into indoor environment that flows outside.

Environmental contamination by intravenous drugs used in anaesthesia are based on three characteristics-P(persistence), B(bioaccumulation) and T(toxicity). The PBT index can hence serve as a useful guide for a more sustainable drug choice. Also, single-use plastic waste from disposable equipment and packaging used in the operation room adds to the environmental pollution. Approximate 0.5-2 kg of biological waste is produced per hospital bed per day in health care setting. Implementing sustainable anaesthesia practices requires a multi-faceted approach.

Using techniques like total intravenous anaesthesia (TIVA) using propofol and remifentanyl has several benefits like reduces the use of volatile anaesthetic agents and better recovery profile. But at the same time avoiding unnecessary use of syringes and drug preparation helps to minimise wastage and its adverse effects. Use of regional anaesthesia (spinal/epidural/nerve blocks) in place of general anaesthesia whenever possible and selecting inhalational agents with lower global warming potentials (isoflurane) can reduce CO₂ equivalent emissions by 64% and anaesthesiologists carbon footprint.

Anaesthesia gas scavenging system (AGSS) and Waste Anaesthetic Gas Disposal (WAGD) system in the operation room should be effective to reduce the exposure of healthcare workers to volatile anaesthetics. System recently used involves using a canister placed on scavenging circuits which absorbs volatile anaesthetic gas and then are later transferred to purified and reprocessed into medical grade anaesthetics. An automated alert system integrated into electronic medical record at every anaesthesiologist's computer workstation helps anaesthesiologists minimize waste during delivery of inhalation agent. Consumption of volatile anaesthetics during a surgical procedure is dependent on fresh gas flow (FGF) rate used. Utilizing closed-loop anaesthesia delivery systems and low and ultra-low-fresh gas flow (0.5l/min) during inhalation-based anaesthesia and higher flows anaesthesia techniques respectively can minimize gas waste and emissions. As rebreathing of CO₂ occurs during low FGF, a CO₂ absorbent must be used in the circuit and exchanged as per use.

The 6 Rs- Rethink, Refuse, Reduce, Reuse, Recycle and Research.

Rethinking is the crucial mental step towards protecting environment and search for more greener alternative and environmentally friendly choices. Refuse by adopting minimalistic approach by avoiding unnecessary preoperative investigations, drug preparations and avoiding excessive stock levels.

Reducing the amount of waste produced e.g. Use of plastic syringes can be reduced by drawing drugs only when needed. Minimising energy expenditure by switching off anaesthesia machines, lights, air-conditioning when not in use. There's an urgent need to replace the hydrofluorocarbon (HFC) refrigerants that most air conditioners still use. Roughly 1,000–3,000 times more potent than CO₂ as a GHG, these refrigerants slowly leak into the atmosphere. Changing filters and ducts at periodic intervals and using energy efficient air-conditioners help to reduce the pollution and save electricity. Hospitals and operation room (OR) should opt for integrated sensor technology, periodically check leaking taps, pipes, etc and reduce the water wastage and help in conserving water. Blue zones patented technology to reduce hospitals hazardous environmental waste gases and being a part of H2E (Hospitals for a Healthy Environment) program can catalyse the goal of having an environmentally friendly OR. Reusable equipment's e.g. Macintosh blade for laryngoscopy instead of plastic disposable blades, use of rechargeable laryngoscope handles instead of non-rechargeable ones can be utilised. Washable operation theatre caps and shoes can be used instead of disposable ones.

Recycling anaesthesia equipment and phasing out single-use plastics can reduce the wastage and the carbon print. Collection of potential recyclables including paper, plastic, glass generated from packaging of drugs, syringes and intravenous fluids can be collected separately and delivered to local plastic recycling firms. Continued Research is essential to further quantify the environmental impact of anaesthesia practices and exploring the benefits and costs of renewable energy for production and transportation can help reduce the carbon footprint. Despite awareness of the environmental impact, several challenges hinder the adoption of sustainable anaesthesia practices. One challenge is the lack of standardized protocols for minimizing gas emissions during anaesthesia administration.

Additionally, healthcare facilities may prioritize patient safety and efficiency over environmental considerations, leading to reluctance in adopting greener practices. Interdisciplinary programs to raise awareness, education and training to the anaesthesia providers and surgical as well as nursing colleagues on sustainable day to day practices and adopting protocols and procuring Green OT certification in every institute can play a vital role in environmental stewardship and minimising carbon footprint. Governments and healthcare organizations can implement policies and regulations to incentivize the adoption of sustainable anaesthesia practices, such as carbon pricing mechanisms or procurement guidelines favouring environmentally friendly products. Collaboration between researchers, healthcare providers, policymakers, and industry stakeholders are crucial for driving innovation and implementing sustainable solutions. Highlighting case studies of healthcare facilities or regions that have successfully implemented sustainable anaesthesia practices can serve as inspiration and provide practical insights for others. Carbon credit programs like Kyoto Protocol and Paris Climate Agreement are developed to regulate and substantially reduce the GHGs emissions.

Anaesthesiologists can adopt ecological friendly personal lives like diet choices (consuming more vegetables and less meat), tree plantation drives and use of public transportation instead of driving private vehicles can reduce pollution. Use of telemedicine and arranging meetings in study groups, major departmental conferences can be held through online virtual option, rather than meeting in person. Agriculture is responsible for one-third of greenhouse emissions along with dairy, poultry, meat industries. Global warming can have deleterious consequences on protein function and thereby health of organisms. Pre breeding and genomics assisted breeding contributes to more efficient development of climate resistant crops in less time duration. Artificial intelligence (AI) may play a pivotal role in mitigating the escalating

effects of climate change by enhancing forecasting weather conditions. AI powered smart home systems can improve energy efficiency by controlling heating and appliances.

Climate change simulations provide valuable insights by utilizing complex models to forecast future environmental conditions based on various scenarios. They help scientists understand potential impacts on ecosystems, weather patterns, sea levels, and human societies.

Nanotechnology, because of unique properties of nanomaterials, offers a wide range of applications in environment, agriculture, food and energy sectors. The nanotechnological products and processes are considered as the

most effective and innovative tools/mode to accomplish sustainability goals. Nanostructured materials such as nanocomposites, functionalized nanomaterials, nano catalysts, carbonaceous materials, nano zeolites etc. have enormous possibilities in sequestration and reduction of greenhouse gases, biofuel production, waste-water treatment using a sustainable approach.

In conclusion, addressing climate change in the context of anaesthesia requires concerted efforts from healthcare professionals, policy makers and industry stakeholders. By quantifying the environmental footprint of anaesthesia practices, identifying challenges, and implementing sustainable solutions, we can mitigate the impact of anaesthesia on the environment while ensuring high quality patient care. Through education, innovation and collaboration, we can move towards a greener and more sustainable future for anaesthesia practice.

Global Knock Out: Induction to Extinction?!

-Time to reduce the Anaesthesiologists' carbon footprint.

Dr. Santosh Kumar Sharma

Gorakhpur, Uttar Pradesh

ISA No. K1476

ISA National Essay Contest

3rd Prize (Category B)



Climate change is as real as death. It will be inevitable unless we truly accept it and go all out to prevent it”

Climate change/global warming is one of the most compelling issues of our times, posing significant threats to environmental sustainability and global economy. Human health has been the ‘victim’ to these climate changes that have contributed to one-quarter of all deaths worldwide. Ironically, the global health industry is also the ‘culprit’ of climate change, being a carbon intensive service deeply involved in activities contributing to air, water and soil pollution. They contribute to around 5% of the planets’ greenhouse gases (GHG), one third of which is emitted by hospitals itself. The volatile anesthetic agents alone account for 5% of these hospital GHG emissions, measured in terms of global warming potential and expressed in terms of year time horizon (GMP100). Alarmingly, the use of an anesthetic gas desflurane for a five-hour surgery can emit GHG equivalent to a car trip for 2000 miles! As per a study, the hospitals in USA alone produce disproportionate anesthetic gas emissions equal to one coal-fired field or one million automobiles per year! The operating theatres generate one third of the hospitals’ total waste while spending 3-6 times more energy than hospitals as a whole. There is both lack of knowledge and sustained effort from the medical fraternity including the anaesthesiologists to combat the climate change. The anaesthesiologist is faced with the dilemma of patient care and safety on one hand, and deal with climate change on the

other hand. Hence a holistic approach is needed, such that both patient care and planet health can coexist. The future generations though not responsible will suffer most while being least able to bring a change if we don’t act today.

As frontline healthcare providers, anaesthesiologists can play a crucial role in managing the consequences of the anthropogenic climate change on patient health and well-being as well as allay the climate change due to human acts. Anaesthesiologists will need to be well versed and skillful to deal with challenges ranging from managing disasters due to extreme weather events to adjustments in perioperative and emergency medicine care while addressing the altering transmission patterns for vector-borne infections, heat and pollution related illnesses.

The practice of anaesthesiology and perioperative care is energy, water and material-intensive, and anesthesia providers use significant quantities of medical products and drugs thus generating a substantial carbon footprint. Anaesthesiologists are best placed to fit into the role for environmental stewardship and thus mitigate the deleterious impact on climate. From the production and disposal of medical equipment to the use of volatile anaesthetic agents, anaesthesiology contributes to GHG both directly and indirectly. The total impact of an anesthetic agent as a clinical pollutant is quantified by its ‘life cycle assessments’ (LCA) or a ‘cradle to grave’ analysis including resource extraction, device/drug manufacturing, transportation, use and reuse/disposal. Anaesthesiologists are increasingly

seeking greener ways to reduce carbon emissions and adopt more sustainable practices. This includes 'greening of the operating room and perioperative area' based on principles of '6 Rs' (rethink, refuse, reduce, reuse, recycle, and research) for waste minimization.

Rethinking helps us stop and think about greener alternatives. This fundamental and crucial mental exercise is the first step for eco-sustainability. Choosing other anesthetic gases like sevoflurane and isoflurane and avoiding desflurane (2500 times more potent than CO₂ in trapping heat in the atmosphere) and nitrous oxide altogether wherever possible and keeping fresh gas flows as low as possible can go a long way in reducing the GHG emissions. All inhalational gases should be scavenged appropriately using capture technology that use canisters. Intravenous and regional anesthesia techniques should be practised as far as possible to minimise the requirement of inhalational agents.

Refusing or saying 'no' to things we don't need is the next step. Rational use of diagnostic tests and careful review of medical records during preoperative visits and otherwise can prevent unnecessary investigations as well as its duplication thus saving time and 'carbon' resources. Reformulating pre-packaged kits and separate packaging of rarely used items may be done to avoid unnecessary disposal of unused items. Similarly keeping lesser stock volumes of drugs and consumables and regular audits may prevent wastage due to expiry. This minimalist approach reduces wastage and misuse of resources and energy.

Reducing wastage is equally essential. The practice of drawing up of drugs from large size multidose vials and opening consumables beforehand for 'standby' is wasteful, unwise and should be shunned. The practise of using prefilled syringes is climate salvaging and needs to be further promoted. Switching off the anesthesia machine and other appliances in the workplace when not in use must be practised religiously.

Anaesthesiologists can also contribute in planning of future eco-friendly infrastructure as well as transforming existing workplace by redesigning or retrofitting with energy conserving technology and devices like motion-sensing surgical taps, occupancy sensing lights and air-conditioning and use of LED lights to reduce energy expenditure.

Reusable anesthesia equipments (drug trays, face masks, breathing circuits, laryngoscope blades), linen drapes and surgical gowns should be preferred wherever possible while 'single use' equipment may be reprocessed and reused few times before being discarded.

Recycling initiatives have the potential to reduce operation theatre waste reaching landfills by 60%. Plastics, paper and glass which account for a huge waste load from theatres everyday can be easily collected and recycled. Select equipments may be refurbished and reused in-house or donated to underprivileged/charitable hospitals, medical missions or veterinary centres/wild life rehabilitation centres.

Judicious segregation of contaminated clinical waste (including commonly unused drugs like propofol) and sharps from general and recyclable wastes and appropriate disposal and incineration must be a standard practice to be followed by all Anaesthesiologists. These wastes must be prevented from being dumped directly into the drains or waterbodies because of the threats to the aquatic habitat. A Persistence-Bioavailability-Toxicity (PBT) index is used to assess the aquatic environmental risk of drugs and thus guide for a sustainable drug choice.

Anaesthesiologists are well-positioned to turn 'green-issues' leader and activist to advocate for eco-sustainable healthcare both in their professional community and in hospital policy and purchase decisions. Educating the hospital staff and raising awareness about the deleterious health impacts of climate change is perhaps one of the most vital tasks. By promoting sustainable healthcare practices, anaesthesiologists can drive

meaningful change within their institutions and contribute to broader efforts to address the climate crisis. Anaesthesiologists can use their expertise to formulate policies and guidelines on climate resilience and sustainability in healthcare by collaborating with interdisciplinary stakeholders, including public health experts, hospital owners, policymakers, health industry, national societies and environmental advocates. Supporting and funding audits and research in anaesthesiology and its impact on climate change will go a long way in framing eco-sustainable methods and policies.

The interplay of climate change and anaesthesiology can be effectively addressed by education and training programs, research and professional development initiatives. There is an urgent need for integration of climate crisis, environmental sustainability and health into the medical and anaesthesiology curriculum. By incorporating principles of eco-anesthesia and environmental stewardship into medical training, future anaesthesiologists can develop the knowledge and skills necessary to minimize their carbon impact and advocate for sustainable healthcare practices throughout their careers. Continuing education opportunities, professional certifications and awards can further support anaesthesiologists in implementing sustainable practices and staying abreast of the emerging research and best practices in eco-friendly anaesthesia. Anaesthesiologists can become crucial evidence generators by practicing 'green concepts' and 'scientific rigor' and help minimise the climate issues by publishing consequential articles in indexed journals.

Comprehending a meaningful bigger picture on the climate issue and designing the future road map for climate change will undoubtedly be influenced by available literature contributed by us today. The Anaesthesiologists can also set an example by adopting and practicing a carbon friendly green lifestyle outside their workplace with green travel, vegan food choices, tree plantations, best out of waste creations and become social influencers for others to adopt the same. Wherever possible virtual meetings through video and tele-conferencing may be used for minimising the transport (air and road) associated 'carbon miles' emissions.

The practice of anaesthesiology intersects with climate change in countless ways, presenting both challenges and opportunities for healthcare professionals to alleviate the environmental impact of their practice and address the health effects of a changing climate. There will always be myriad small day-to-day decisions which all anaesthesiologists can take in their professional and personal capacity to minimise the carbon footprint of their clinical practice and play a vital role in promoting health equity, resilience and sustainability in the face of the climate crisis. Increasing awareness and 'waste not, want not' attitude is the first step. The global campaign for environmental sustainability is not merely desirable, but ethically required in a rapidly closing window of opportunity. Our personal efforts will transcend the confines of our theatres and help curb the seemingly inevitable apocalypse. It is high time we practised 'planetary primum non nocere'.



Yuva Parnika (Youth Zone)



CROSSWORD

Dr. Parul Jindal

Professor

Department of Anaesthesiology

HIMS, SRHU, Dehradun

ISA No. P1190



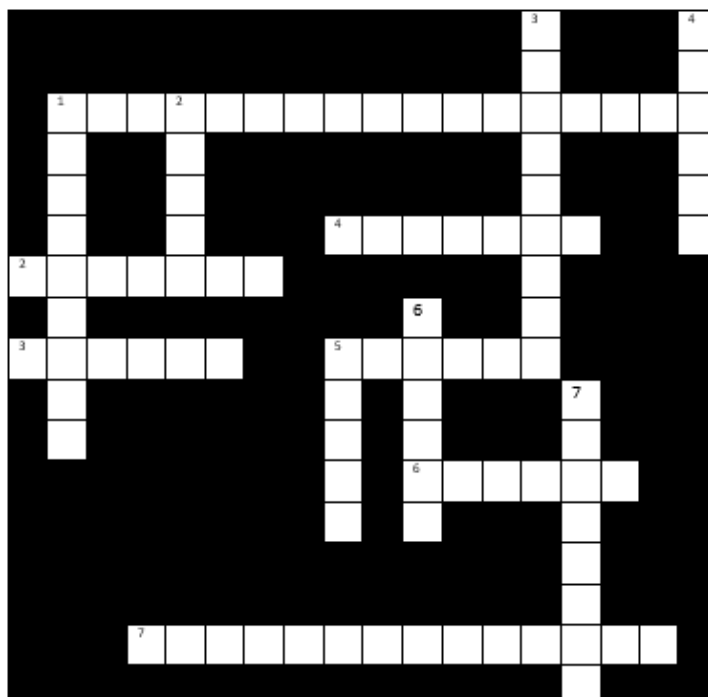
ANAESTHESIOLOGIST: A MAVERICK

ACROSS

1. Silent force behind the scene (17)
2. can be classified according to Fried's Physical Phenotype Model (7)
3. Incommittees, helping to resolve complex ethical issues in patient care (6)
4. Major cause of psychological stress before surgery (7)
5. Models of communication developed by Schultz Von Thun (6)
6. Speaker whose words are primarily intended to (6)
7. Working closely with other healthcare providers (14)

DOWN

1. Cognitive aids (9)
2. Biopsychological model of health and disease, proposed by (5)
3. Communication which was intended to invoke reassuringly pleasant or familiar images (9)
4. Legal right to an intellectual property given to a person or entity without interference from others who wish to replicate, use, or sell (6)
5. WHO 'Safer Surgery Lives' programme (5)
6. Wordsmith (6)
7. Develop and implementto enhance patient safety and reduce medical errors(8)

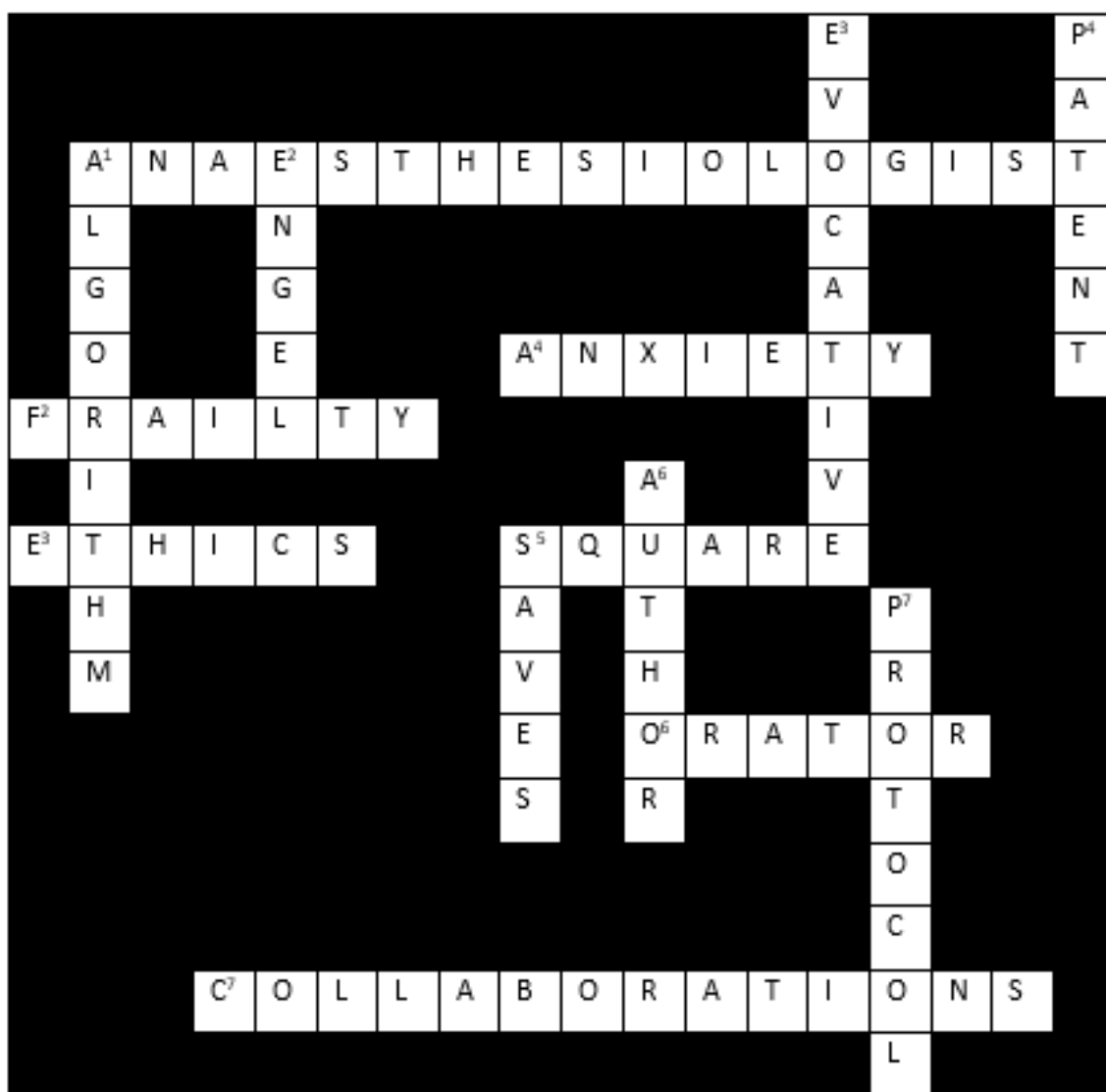


ACROSS

1. Silent force behind the scene (17)
ANAESTHESIOLOGIST
2. can be classified according to Fried's Physical Phenotype Model (7)
FRAILITY
3. Incommittees, helping to resolve complex ethical issues in patient care (6) ETHICS
4. Major cause of psychological stress before surgery (7) ANXIETY
5. Models of communication developed by Schultz von Thun (6) SQUARE
6. Speaker whose words are primarily intended to (6) ORATOR
7. Working closely with other healthcare providers (14) COLLABORATIONS

DOWN

1. Cognitive aids (9) ALGORITHM
2. Biopsychological model of health and disease, proposed by (5) ENGEL
3. Communication which was intended to invoke reassuringly pleasant or familiar images (9) EVOCATIVE
4. Legal right to an intellectual property given to a person or entity without interference from others who wish to replicate, use, or sell (6) PATENT
5. WHO 'Safer Surgery Lives' programme (5) SAVES
6. Wordsmith (6) AUTHOR
7. Develop and implementto enhance patient safety and reduce medical errors (8) PROTOCOL



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My Quotes

1. Engagement precedes achievement; immerse, invest, and inspire.
2. Smile relentlessly, for in its warmth, fear finds no refuge, apprehension finds no shelter, and negativity finds no home.
3. Your limitations are the whispers of doubt in your mind; mute them with the roar of your determination.
4. Time is invaluable; allocate it only on endeavors that uplift and inspire your soul.
5. Patience is the strength to embrace the present moment, while believing in the promise of tomorrow.
6. In the end, it's not only about the organisation you work for, but what you bring to the table through your expertise and abilities.
7. Opportunists are the architects of their own success, built on the ruins of others' misfortune.
8. Stress is inevitable; those who navigate it with resilience exhibit the artistry of mastery.
9. In the orchestra of life, chronic whiners play the broken record of negativity, dampen the spirit and obscure the horizon of hope.
10. Insecurity is the thief of joy, the saboteur of dreams, and the architect of its own destructions.

Quiz (Multiple Choice Questions)



Dr. M Rama Krishna Reddy
Professor of Anaesthesia
PMRIMS, Hyderabad
GC Member, ISA

&



Dr. Abhyuday Kumar
Associate Professor,
Anaesthesia
AIIMS, Patna

1. “Double tract” sign on airway ultrasound is seen in

- A. Tracheal intubation
- B. Oesophageal intubation
- C. Laryngeal oedema
- D. Tracheomalacia

Answer: B

2. The door to needle time for thrombolysis in acute ischaemic stroke should be less than

- A. 30 minutes
- B. 60 minutes
- C. 90 minutes
- D. 3 hours

Answer: B

3. Spinal cord stimulation is useful in following conditions except:

- A. Failed back surgery syndrome
- B. Peripheral ischaemia
- C. Angina Pectoris
- D. Compartment syndrome pain

Answer: D

4. Indications for Transcranial Doppler are all except:

- A. Intracranial vasospasm
- B. Diagnosis of Brain death
- C. Monitoring for emboli during procedures
- D. Measurement of focal cerebral flow during intractable seizure activity

Answer: D

5. Which of the following monitors is the most accurate indicator of ventricular preload:

- A. Central venous pressure trends
- B. Pulmonary capillary wedge pressure
- C. Transoesophageal echocardiography
- D. Mixed venous saturation

Answer: C

6. Driving pressure in mechanical ventilation is:

- A. Plateau pressure minus PEEP
- B. Peak pressure minus PEEP
- C. Peak pressure minus Plateau pressure
- D. Peak pressure plus Plateau pressure

Answer: A

7. A precordial Doppler can detect a minimal of ___mL of intracardiac air:

- A. 0.1
- B. 0.25
- C. 0.5
- D. 1

Answer: B

8. Neurogenic shock has all the following classical characteristics except:

- A. Hypotension
- B. Vasodilation
- C. Bradycardia
- D. Narrowed pulse pressure

Answer: D

Anaesthesiologist: “A jack of all trades”

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Who is an anaesthesiologist ? You will find people saying that an anaesthesiologist is a doctor who “puts patients to sleep” before surgery. It’s true that this a part of their job, but it’s only a small part. As I embarked on this journey myself, I realised the diverse roles an anaesthesiologist plays. An anaesthesiologist is actually a perioperative physician, where “peri” means all-round. Anaesthesiologists are not only responsible for patient care throughout the surgical experience: before,during and after the surgery but their responsibilities extend far beyond merely administering anaesthesia. So, let’s shine a spotlight on anaesthesiologists—they’re not just the folks who get to poke you with a needle before surgery and then disappear into the operating room (OR) mist. Oh no! Their job is far more intricate and essential than that.

1. Masters of sedation: It is one of the main roles that anaesthesiologists play.

They carefully select the right cocktail of medications to keep the patient peacefully unaware of the surgical pain and complications. Anaesthesiologists are the ones who are trained extensively to make conditions ideal for a safe and successful surgery without the patient being aware of the surgical chaos around.

2. Medical detectives : Before one even says “scalpel,” anaesthesiologists are diving into the patient’s medical history like detectives on a binge-worthy crime show. They want to know

everything—from when the patient ate before surgery to what he/she ate, his allergies ad so on (you'd be surprised). This detective work ensures they can tailor their anaesthesia approach to the patient’s specific quirks and needs.

3. Pain Whisperers: Post-surgery pain? The most common fear patients have in their mind is that if they undergo surgery, how much it is going to hurt them. Enter the anaesthesiologists with their bag of tricks—pain relief medications, nerve blocks, and maybe even a magic wand (okay, not really, but wouldn’t that be cool?). They are all about ensuring that the patient’s recovery is as comfortable and speedy as possible.

4.Crisis Managers Extraordinaire: The anaesthesiologist is called in when the whole list of doctors find themselves helpless in reviving or resuscitating a dying patient.The role of an anaesthesiologist is not less than a multitasking geek. He/she is involved right from administering CPR, to securing central venous access, airway manipulation, defibrillation, administering dangerous but lifesaving drugs and taking all critical and sensitive decisions within a span of few minutes.

5. Innovators in Anaesthesia: Yes, anaesthesiologists do more than just putting you to sleep. They are also pioneers in their field, constantly exploring new ways to make anaesthesia safer and more effective; eg- using very thin needles for spinal anaesthesia, using ultrasound for guiding nerve blocks with high precision, using artificial intelligence and machine learning for monitoring of patients in the intensive care unit, depth of anaesthesia monitoring, control of anaesthesia,

adverse event and risk prediction, use of target controlled infusion systems for pain management and many more.

6. Team Players and Educators: Anaesthesiologists are the ultimate team players. They work closely with surgeons, nurses, and other healthcare professionals to coordinate patient care. We should not forget their role as educators—shaping the minds of future doctors with tales of medical heroics and that occasional cautionary tale about the time they accidentally put a patient to sleep using a helium-filled balloon.

To summarise, anaesthesiologists are the unsung heroes of the OR, blending medical expertise with a knack for keeping things light (and patients comfortably numb). They embody the spirit of being all-round doctors—part scientist, part magician, and all heart. So, the next time patients are about to go under the knife, they should remember to thank the anaesthesiologist for making sure that they sleep like babies.

“ Nevertheless, the anaesthesiologist exits the room silently. The mob never knows who came and went and who saved the patient but they are happy that their near and dear one was saved by the team of doctors attending to them”. I think that is what a doctor wants..... to save lives ! On Doctor’s Day, let us cheer the unsung hero of the medical fraternity ‘ the anaesthesiologist: an all round doctor’

Anaesthesiologists as Multimodal and Multidimensional Clinicians

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Introduction

Anaesthesiologists are often seen as the silent guardians of the operating room, ensuring that patients remain safe, comfortable, and pain-free during surgical procedures. However, their role extends far beyond anaesthesia administration. They are truly multimodal and multidimensional clinicians who play critical roles across various aspects of healthcare, contributing significantly to patient outcomes, medical research, and the overall efficiency of healthcare systems.

Expertise in Anaesthesia and Pain Management

At the core of anaesthesiologists' practice is their expertise in anaesthesia administration and pain management. They carefully assess each patient's medical history, current health status, and surgical requirements to tailor anaesthetic plans that ensure optimal pain

relief and safety. Their deep understanding of pharmacology and physiology enables them to select appropriate anaesthesia techniques and medications, minimising risks and enhancing recovery post-surgery.

Leadership in Critical Care and Perioperative Medicine

Anaesthesiologists are leaders in critical care, particularly in intensive care units (ICUs) where they manage patients who require complex medical interventions. Their proficiency in haemodynamics, ventilation strategies, and fluid management is crucial for stabilising critically ill patients. Moreover, in perioperative settings, they coordinate closely with surgical teams to manage perioperative risks and ensure seamless transitions between preoperative, intraoperative, and postoperative care phases.

Innovators and Researchers

The field of anaesthesiology is dynamic and research-intensive. Anaesthesiologists contribute significantly to medical research through clinical trials, studies and innovations in anaesthesia techniques and pain management strategies. Their research efforts drive advancements in patient safety, anaesthesia efficacy, and the development of new protocols that improve surgical outcomes and enhance recovery times.

Collaboration and Interdisciplinary Approach

Effective collaboration is another hallmark of an anaesthesiologist's practice. They work closely with surgeons, nurses, and other healthcare professionals as integral members of multidisciplinary teams. By fostering open communication and mutual respect, they ensure comprehensive care plans that address the diverse needs of patients undergoing surgical procedures.

Advocacy for Patient Safety and Education

Anaesthesiologists are advocates for patient safety and education. They educate patients and their families about anaesthesia options, potential risks, and postoperative care instructions. By empowering patients with knowledge, they enhance patient satisfaction and reduce the anxiety related to surgical procedures. Furthermore, anaesthesiologists champion patient safety initiatives within healthcare facilities, implementing best practices and protocols to minimise errors and adverse events.

Conclusion: The Evolving Role of Anaesthesiologists

In conclusion, anaesthesiologists play a pivotal role as multimodal and multidimensional clinicians in modern healthcare. Beyond their expertise in anaesthesia and pain management, they excel in critical care, research innovation, interdisciplinary collaboration, and patient advocacy. Their contributions extend beyond the operating room, shaping the future of surgical care and patient outcomes through continuous improvement and dedication to excellence.

As healthcare evolves, anaesthesiologists continue to adapt and innovate, leveraging their diverse set of skills to meet the challenges of a rapidly changing medical landscape. Their commitment to patient centered care and ongoing professional development underscores their importance as indispensable members of healthcare teams worldwide. Through their multifaceted approach and unwavering dedication, anaesthesiologists uphold the highest standards of medical practice, ensuring the safety, comfort, and well-being of patients throughout their surgical journeys.

Anaesthesiologist: a multi-talented doctor

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Madikeri

ISA No. A5661/A



Anaesthesiologists are physicians who specialise in anaesthesia care, pain management and critical care medicine. From preoperative assessment to peri-operative management, the main goal of anaesthesiologists remains to keep the patients safe and comfortable. With every surgical case having the potential to turn into an emergency, patients are carefully evaluated preoperatively, stabilised haemodynamically, monitored meticulously and kept pain-free and comfortable peri-operatively. However, making the patient leave the hospital in a pain-free state is the most celebrated job of an anaesthesiologist.

An anaesthesiologist is someone who rushes to the casualty when the primary physician faces a difficulty in intubation or is unable to stabilise the patient. Ventilation and the critical management are also handled with expertise ensuring the patient is stable.

With the medical knowledge of an intensivist and skills of a surgeon, the expertise of an anaesthesiologist also encompasses the use of equipments and machines. They secure central catheters, haemodialysis catheters and arterial and intravenous accesses with utmost sterility for both monitoring and resuscitation. Critical care units headed by anaesthesiologists are increasingly becoming popular in many of the tertiary care set-ups. Patient care extends to day and night in the Intensive Care Units where

the care given includes diagnostic, as well as procedural management.

“A little bit of sedation and the procedure is done!” is something that is often heard outside the operation theatres. From skin biopsy to open-heart surgeries, the involvement of anaesthesiologists has become wider with the passage of time. Anaesthesiologists aid in the neurological, gastroenterology, obstetric, oncology and cardiology procedures, taking care of both, the stability and comfort of the patients. Most importantly, the spectrum of care is never limited to any age group and even involves foetal medicine.

Anaesthesiologists are the primary care physicians in the management of pain in the pain clinics. With the increasing demand for a pain-free life, anaesthesiologists play a great role in improving the quality of life of these patients. Palliative care is a boon to patients with terminal illnesses whose everyday lives would have otherwise been a nightmare. This includes a holistic approach aiming to prevent and relieve symptomatic sufferings of these patients, thereby reducing the morbidity and mortality. This addresses the physical, psychological, social and spiritual sufferings of the patients. One of the most modern advancements in pain management includes on-arrival analgesia with different peripheral nerve blocks under ultrasound guidance in

casualties. It not only relieves pain but also helps the primary care doctors in positioning and assessment. Pain management comes with greater responsibilities including the storage of and dealing with narcotic drugs. From an era in which asking for pain-free child birth was considered a sin, to an era where we can now witness parturients walking with epidural catheters, anaesthesiologists play a great role in labour analgesia.

To conclude, the field of anaesthesiology has been constantly evolving, considering the developments in the machines, equipments, drugs and even the technical skills. However, the competency and enthusiasm of the anaesthesiologists have always remained at par so that the patients remain comfortable. Considering all the care provided by the anaesthesiologists in the various fields, they can definitely be called jacks of all trades and masters of many!

Anaesthesiologist: A physician with a difference

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ISA No. A5385/A



“Anaesthesia is the bridge between suffering and relief, between disease and cure, between fear and hope. It is a vital component of modern medicine that enables millions of lives to be saved and improved every year”– Dr. Adrian Gelb [Past Secretary of World Federation of Societies of Anaesthesiologists (WFSA)].

In the current era of advancements in all other medical specialities, the field of anaesthesia is not to remain immune. The days have come where Charles Darwin's theory of ‘survival of the fittest’ has come to play a role in a magnanimous way. We are precisely at the crossroads of transformation from an anaesthesiologist to a perioperative physician. What actually is driving us to become a perioperative physician is that 80% of the perioperative complications are attributable to underlying medical conditions.

The morbidity and mortality that follow surgery are largely due to surgery and anaesthesia and we deal with these perioperative complications effectively and in time.

Gone are those days when we sought opinion from cardiologists or pulmonologists to assess and optimise the patients and would look only into the intraoperative care of the patient. We, as perioperative physicians address the continuum of medical care of the surgical patient and focus on the patient's status before, during and after surgeries and this may even extend beyond the perioperative period. In the preoperative assessment clinic, we are the ultimate risk identifiers using various scoring systems.

We are on the top of the surgical care pyramid as we continuously add valuable inputs towards

better care of the patients in the perioperative period. The American Society of Anesthesiologists (ASA) defines anaesthesiology as "the practice of medicine dedicated to the relief of pain and total care of surgical patients before, during and after surgery." We have a vast knowledge of the pathophysiology of various disease processes and their pharmacological management which helps in better patient management throughout the continuum of perioperative care. Surgical intensive care units (ICUs) are now manned by intensivists, many of whom are anaesthesiologists.

We also come into the picture in a wide variety of perioperative situations including preoperative evaluation, consultation with the surgical team, tailoring of a plan for anaesthesia, airway management, intraoperative life support, pain control, intraoperative stabilisation of all the vitals and postoperative pain management.

It is aptly said that as anaesthesiologists, we are physicians to surgeons and surgeons to physicians. We not only deal with the

complications of anaesthesia postoperatively but also manage postoperative pain, chronic pain, pain of cancer, labour analgesia, cardiac and respiratory therapy, etc.

Outside the operating room realm, our spectrum of action includes general emergencies, trauma, intensive care, acute and chronic pain management. Similarly in the ICUs, we work as intensivists and provide medical and diagnostic services, take care of intubated and non-intubated patients and also control the various types of infections beside coordinating with various other medical and paramedical personnel as team leaders.

In conclusion, anaesthesiologists ultimately hold the foremost positions and are involved in all aspects of the field of perioperative medicine. The patients come in a state of great anxiety, full of apprehension and unbearable pain, and while listening to all of it and comforting, we anaesthesiologists put them into deep sleep, only to wake them up to normalcy. That's magic, that's anaesthesia and that's how we anaesthesiologists are....always ready with a smile for the next action.

Anaesthesiologist: A Versatile (Saviour) Doctor

Dr. Daisy Hazarika

Senior Resident,

All India Institute of Medical Sciences,

Guwahati

ISA No. D-2129



A call for help from the emergency department is sent to a specialist doctor. The patient is having difficulty breathing and noisy breathing sounds. The patient is also desaturating. Meanwhile, a person attends the call wearing a hospital gown, face mask, and cap, secures the airway, and settles the patient's condition. When the person is about to leave, a nursing officer urges to see a patient in unbearable pain. The doctor does some intervention using ultrasound, and after a few minutes, the patient gets rid of acute severe pain. With a humble attitude, the doctor puts the notes, informs the further plan with the nursing team, and says bye to go. But, he again gets a call from the nursing officer and the resident looking after a patient on a mechanical ventilator....and...he continues....

All this time, students and patient attendants were observing with curiosity.... Who was this saviour, who had an answer to all 'Help Calls' and acute conditions? One of the attendants asked who was the person behind the mask. The nurse answered that the person was the anaesthesiologist.

Contrary to the widespread belief that anaesthesiologists are only 'doctors who put patients to sleep,' they are highly qualified medical professionals who play a crucial role in the medical field. Their scope extends beyond the operating room, covering various duties that illustrate their multifunctional character. Their role is critical in ensuring the safety and well-being of patients and providing a secure

environment for medical procedures.

Anaesthesiologists are key figures in contemporary medicine. They are multidisciplinary physicians whose knowledge goes beyond simply administering anaesthesia. They are essential members of a surgical team and critical care unit. An anaesthesiologist's core perioperative medicine responsibilities include preoperative evaluation, intraoperative care, and postoperative treatment.

To determine the risk involved with surgery and anaesthesia, the anaesthesiologists will review the patient's medical history, perform physical examinations, and order any necessary tests before the procedure. They create tailored anaesthetic plans considering the patient's general health, the type of surgery, and any pre-existing medical issues, all to ensure the patient's comfort. Anaesthesiologists monitor the patient's vital signs during the procedure and provide anaesthesia as required by the patient and the surgical team. Their critical thinking and decision-making abilities are demonstrated by their capacity to react to potential problems quickly and efficiently, always with the patient's comfort in mind. Postoperatively, an anaesthesiologist oversees the patient's recovery from anaesthesia, managing pain and any postoperative complications.

Anaesthesiologists play a significant role in critical care environments like intensive care units (ICUs); their role during the coronavirus

disease (COVID)-19 pandemic was even portrayed by the TIME magazine. Their role outside the operating rooms is also increasing daily. They work as a multidisciplinary team to create and carry out treatment regimens for patients with severe illnesses. They oversee patients who need complicated drug schedules, round-the-clock monitoring, and mechanical ventilation. In emergencies, their airway management and resuscitation abilities are vital when timely and effective intervention is required.

Additionally, anaesthesiologists make substantial contributions to the field of pain medicine by treating chronic pain disorders of millions of people globally. They use various methods to reduce pain and enhance patients' quality of life, such as regional nerve blocks, epidural injections and medicines. Their thorough knowledge of pain physiology allows them to work with physiotherapists, psychologists, and other medical specialists to create individualised treatment strategies that may incorporate interdisciplinary techniques.

Anaesthesiologists are also essential to both research and education. They participate in

clinical trials to improve anaesthesia practices, patient safety, and recovery outcomes. They also teach anaesthetic principles, pain management techniques, and perioperative care procedures to medical students, residents, and other healthcare professionals. As part of their teaching duties, they make sure the next generation of medical professionals has the information and abilities needed to provide anaesthetic care that is both safe and effective.

In summary, anaesthesiologists' responsibilities go well beyond simply delivering anaesthesia. They are adaptable healthcare providers, particularly strong in perioperative medicine, critical care, and pain management. If we say that anaesthesiologists are the backbone of a hospital, it will not be an exaggeration. They are essential healthcare team members because of their priceless contributions to patient care, safety, and medical education. The knowledge and commitment of anaesthesiologists are crucial to maintaining the best possible patient outcomes and developing the specialities of perioperative medicine. Unfortunately, most of their contribution goes unnoticed and unsung behind the mask and curtains of the hospital.

Anaesthesiologist: A Multipurpose Physician

Dr. D. Sanitha Kumari

Junior Resident

D.Y. Patil Medical College, Kolhapur,

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ISA No. K3250/A



Introduction: The Role of Anaesthesiologists

Anaesthesiologists are medical specialists trained in the administration of anaesthesia, perioperative care, pain management, and critical care medicine. Their role extends beyond simply administering anaesthesia during

surgery; they are integral members of the surgical team. Anaesthesiologists are indispensable in ensuring patient safety, comfort, and optimal physiological conditions throughout medical procedures.

Perioperative Care: Ensuring Safety and Comfort

One of the primary responsibilities of anaesthesiologists is to assess patients' preoperatively, evaluating their medical history, current health status, and potential risks associated with anaesthesia. This thorough assessment allows them to develop personalised anaesthesia plans tailored to each patient's needs, ensuring safe anaesthesia administration during surgery. During the surgical procedure, anaesthesiologists continuously monitor vital signs, anaesthesia depth, and overall patient well-being, making critical adjustments to maintain stability and manage any unexpected complications.

Expertise in Anaesthesia Administration

Anaesthesiologists employ a wide array of advanced techniques and specialised skills to tailor anaesthesia care to individual patient needs. These include:

- **Regional Anaesthesia:** Utilising techniques such as epidurals, spinal anaesthesia, and peripheral nerve blocks to provide targeted pain relief and anaesthesia for specific regions of the body, minimising the need for general anaesthesia and its associated risks
- **Paediatric Anaesthesia:** Specialising in the unique physiological and psychological needs of paediatric patients, ensuring safe anaesthesia administration for infants, children and adolescents undergoing surgery
- **Obstetric Anaesthesia:** Providing anaesthesia for labour and delivery, including epidural analgesia for pain relief during childbirth and anaesthesia for caesarean sections, ensuring maternal comfort and safety
- **Cardiac Anaesthesia:** Managing anaesthesia for complex cardiac surgeries, including open-heart procedures, where precise control over cardiovascular function is critical for patient safety

- **Neuroanaesthesia:** Administering anaesthesia for neurosurgical procedures, ensuring optimal brain and spinal cord protection and monitoring to minimise neurological complications

Their precise control over anaesthesia depth and patient monitoring is crucial for ensuring patient safety and surgical success. By carefully titrating anaesthetic agents, anaesthesiologists minimise the risk of adverse effects while keeping the patients unconscious, pain-free, and physiologically stable throughout the surgical procedure.

Critical Care and Emergency Medicine Expertise

Anaesthesiologists play a crucial role in perioperative medicine and critical care, encompassing:

- **Intensive Care Unit (ICU) Management:** Providing comprehensive care for critically ill patients in the ICU, including ventilator management, haemodynamic support, and treatment of life-threatening conditions. The world knows how anaesthesiologists have played a pivotal role in the coronavirus disease (COVID)- 19 pandemic. We anaesthesiologists were the frontline COVID warriors.
- **Emergency Response:** Leading resuscitation efforts and providing immediate life-saving interventions in emergency departments and trauma centres, applying their expertise in airway management, cardiovascular stabilisation, and advanced resuscitation techniques

Acute Pain services, Chronic Pain Management and Palliative Care Expertise

This includes specialising in the assessment and treatment of acute and chronic pain conditions, through advanced techniques such as nerve blocks, epidural injections, and implantable devices. Anaesthesiologists collaborate with multidisciplinary teams to develop comprehensive pain management plans that address each patient's unique needs in acute perioperative and chronic pain, including cancer pain management improving the quality of life and facilitating recovery.

Innovation and Research

Anaesthesiologists contribute significantly to medical research and innovation which aims to optimise patient outcomes, reduce anaesthesia-related risks, and advance the field of anaesthesia and perioperative medicine, driving advancements in:

- **Anaesthetic Pharmacology:** Conducting research to develop safer and more effective anaesthetic agents, optimising drug dosing and administration techniques to enhance patient outcomes and minimise side effects
- **Patient Safety Initiatives:** Leading initiatives to improve patient safety during anaesthesia and surgery, including the development of standardised protocols, checklists, and quality improvement measures to reduce errors and complications
- **Technology Integration:** Harnessing technology such as advanced monitoring systems, simulation training, and telemedicine to improve anaesthesia delivery, enhance patient monitoring, and expand access to specialised care

Education and Training

Anaesthesiologists are educators and mentors, shaping the future of healthcare through:

- **Medical Education:** Teaching medical students, residents, and fellows in anaesthesia principles, perioperative care, critical care medicine, and pain management through didactic lectures, hands-on clinical training, and simulation exercises
- **Continuing Medical Education (CME):** Providing ongoing education and professional development opportunities for practising anaesthesiologists and healthcare providers to stay abreast of emerging research, clinical guidelines, and best practices

Global Health and Humanitarian Efforts

Anaesthesiologists contribute to global health initiatives and humanitarian efforts by:

- **Global Outreach:** Volunteering their expertise in low-resource settings, participating in medical missions, and training local healthcare providers in anaesthesia techniques and perioperative care to improve access to safe surgical services worldwide
- **Disaster Response:** Mobilising quickly during natural disasters, conflicts, and humanitarian crises to provide emergency anaesthesia care, critical care management, and surgical support to the affected populations

Conclusion: The Impact and Versatility of Anaesthesiologists

In conclusion, anaesthesiologists exemplify versatility and expertise across multiple domains of medicine, earning them the reputation as multipurpose physicians. Their ability to adapt to complex clinical scenarios, employ advanced technologies and techniques, and collaborate effectively with multidisciplinary teams underscores their essential role in ensuring safe, effective, and compassionate caregivers who uphold the highest standards of patient care, making significant contributions to improving the quality of life for countless patients undergoing surgery and medical procedures.



ART & LITERATURE PAGES

An Anaesthesiologist's Odyssey of Compassion

Dr. Shirley Ann D'Souza

ISA No. D-0426

Prof & Head of Anaesthesiology

Goa Medical College

Bambolim, Goa



Contemplating my destined decree,
I embraced Anaesthesiology's gentle mystery,
A journey woven by compassion, grace and glee,
What a wonderful, truly enchanting destiny!

Astonishingly, the first letters below align,
Nurturing verses in a poetic design,
Exuding beauty, as ANAESTHESIOLOGIST shines,
Softly, a tribute each letter confines.

Amicable and affectionate amidst the whispers of the operating space,
Noble Anaesthesiologists stand in grace,
Embracing endless duties in every place,
See the boundless compassion in their gentle eyes and face.

Tirelessly manoeuvring the OR and ICU domain,
Humane touch in their profession, no pursuit of personal gain,
Enveloped in a commitment that's never in vain,
Standing vigilant, amid pressure and strain.

In abounding empathy, they find their mighty power,
Observing patients in their crucial hour,
Listening, caring during a PAC like a fragrant flower,
Offering solace to those in pain, in their healing bower.

Gracefully handling all resuscitation,
Ingenuously healing with great compassion,
Skilfully administering nerve blocks beyond imagination,
Trusted physicians in NORA situations.
Endowed with compassion, a virtuoso's art,
Openhearted, playing a vital part,
Navigating recovery's chart,
Crafting a tapestry of care, from the start.

Note: *This poem won the 2nd place at the WCA 2024, Singapore in the Arts and Humanities competition. The theme was "Compassion."*

Anchor Stitch (with more than 40 colour threads) art work



Whispering Woods

Artist: Dr. Bhavna Gupta

Rishikesh

ISA No. B1501

Note: It took the artist more than a year to complete this art work, as it required meticulous selection of colour and filling minute spaces with vibrant colours of threads.

"English Quasi-gazal"

(dedicated to lady anaesthesiologists all over the world)

Dr. Manasi Panat

President ISA Dhule, Maharashtra

Associate Professor, ACPM Medical College



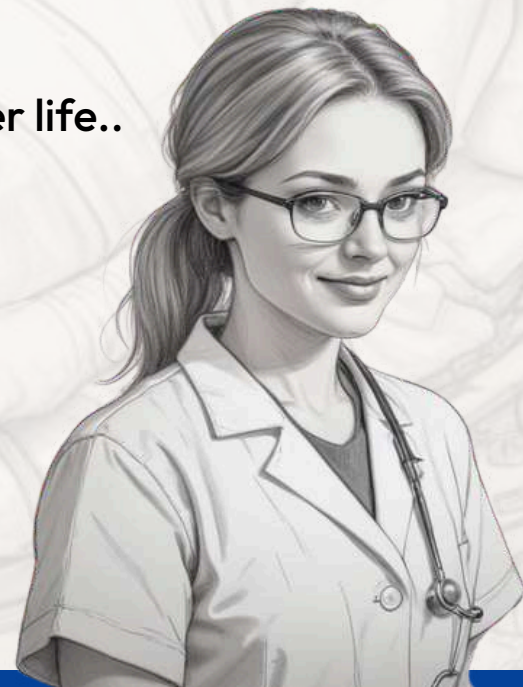
Working relentlessly with perfection in all her life;
Here is a lady devoted to anesthesia with passion in all her life...

Be it her dear kid or the operating surgeon,
She strives for their victory with dedication in all her life...

Beating with her soulmate in a perfect rhythm,
She thrives balancing everyone in loving fashion in all her life..

Be it her own family or the operation theatre staff,
she pervades their hearts with immeasurable satisfaction in all her life...

Bestowed upon with benevolence and elegance;
She endures her journey with compassion in all her life..



Anaesthesiologist – A Multifaceted doctor

Dr. Anusha M S

Post Graduate student

Karnataka Institute of Medical Sciences

Hubballi

ISA No. A5660/A



In the heart of medicine's embrace,
An anaesthesiologist finds their place.

A master of diverse, vital roles,
A guardian of both bodies and soul.

In the theatre of surgery's bright light,
Where life meets the edge of night,
Anaesthesia whispers, soft and deep,
Lulling pain to a peaceful sleep.

Beyond the room of sterile white,
An anaesthesiologist work takes flight.
In clinic, wards, emergency care,
their expertise everywhere.

In pain clinics, they craft relief,
for chronic aches, they bring belief.
With needles, meds and tailored care,
they banish pain from everywhere.

In labour rooms, they stand by side,
helping mothers through the tide.
With epidurals, they bring relief,
easing labour pain and grief.

In emergency's frantic call,
they stand prepared to catch the fall.
Intubating, stabilising fast,
In crisis moments, they hold steadfast.

In ICUs, where life's thread is thin,
they watch and act with skill akin.
Balancing meds, monitoring signs,
in critical care, their expertise shine.

Beyond the mask, a steady gaze,
through critical moments they amaze.
A guardian of sleep, a healer's grace,
in every moment, in every place.

Dr. Madhubala Joshi- Chinchalkar

Mumbai

ISA No. C0468



Dear Madam,

Warm Greetings to you from ISA National Head Quarters and the editorial team of VAPOUR!

It is indeed a pleasure to have you, the 'Polar Woman' on the platform of 'Kaleidoscope'.

1) You are well known as the 'Polar Woman' and 'Antarctica Lady'. Can you tell us why?

I was selected as a doctor accompanying the 36th Indian Scientific Expedition to Antarctica by the Government of India in the year 2017. Internationally, all the expedition members who do wintering in Antarctica are given the title of 'Polar Man' or a 'Polar Woman'. Hence, I am known as a 'Polar Woman' or a lady who spent a year in Antarctica- 'Antarctica Lady'.

2) Can you tell us about your journey to Antarctica? How were you selected for the expedition? Did you accept the invite easily? Who were the members of your expedition?

I am a nature lover. As a doctor, for four years I had accompanied a Himalayan Adventure Camp for the 10th Std students. I had always been fascinated by the Himalayas and Antarctica... One day, I read an advertisement in the newspaper- 'Doctors are required to accompany the 36th Indian Scientific Expedition to Antarctica.' Walk-in interviews were held in 'Prithvi Bhavan' Delhi, by NCPOR (National Centre for Polar and Ocean Research)- Ministry of Earth Sciences. During my interview, I was told that I would be the only woman expedition member in the team and the expedition life would be very difficult. I was prepared for that. Soon, I was shortlisted. Internationally, every expedition member travelling to Antarctica must undergo strict physical as well as psychological

evaluation. This is conducted at AIIMS Delhi for our Indian expedition team. I passed this evaluation as well.

Physical evaluation is necessary because this continent gets totally cut off from rest of the world during eight long winter months between March to October. Ships or airplanes cannot travel there. Wintering in Antarctica is next to going to space! Psychological evaluation is needed because the place is 'Away from civilisation'. In 1959, an international treaty was signed according to which this continent is reserved only for the purpose of science and peace. No human habitat, no tourism, no mining, no army presence.... In this continent which is 5 times the size of India, less than 1000 members stay during winter in various research stations situated hundreds of kilometres away. Around 4,500 members reach here during summer to do field work and collect samples. India has got two research bases in Antarctica, 'Bharati' and 'Maitri'. I was based in the Maitri research base for nearly a year, along with other 24 members who included scientists as well as logistic members like carpenter, welder, cook, electrician, etc.

I was the only woman member, the only doctor and eldest of all! Half the team members were of my son's age!!

3) Madam, you have spent an entire year on ice. It must have been very tough indeed. Tell us your experiences and how you could bear this cold and tough environment. Were you used to living in the cold before you went to Antarctica?

Antarctica is a continent of superlatives! Highest, driest (about 20% humidity), coldest (summer temperatures -5-to-10-degree Celsius, lowest recorded temperature of our planet -89.3 degree Celsius is observed here) and windiest continent. I have lived all my life in Mumbai, and I was never used to living in the cold before going to Antarctica.

The Government of India took excellent care of all our expedition members. We were provided with special Antarctic clothing so that the expedition members could go out and do field work during the summer. During the winter, all the members were station bound. Members from all countries stayed in their respective research bases which were provided with generators. These functioned day and night to maintain the inside temperature between 16-18 degree Celsius and were the lifelines of every Antarctic base. Life was harsh and challenging indeed!

4) Did you conduct experiments there in Antarctica and on the way? What were those experiments and what were your findings? What was your role in the expedition?

In Antarctica, scientists do the research and logistic members e.g. mechanics, generator operators, electricians, cooks, welders, medical officers etc. help them in doing so and help to maintain the research base as well. During summer, the scientists do the field work and collect samples. Research is being done in various fields like meteorology, glacier melting studies, paleoclimatic history, geomagnetism, study of birds and animals, algae, etc. I used to take a keen interest in this work and used to accompany the scientists to the field work, when possible.

I was selected as a doctor for the team. I used to take care of the physical as well as mental health of my team members. Challenges during summer and winter were different. During summer when field work took place, injury cases were common and I had to handle them. During polar nights, winter effects are observed in many members at the research stations of various countries due to changes in the rhythm.

I used to conduct yoga classes, English-speaking classes for logistic members, encourage gym, indoor sports and encourage learning new things.... and we faced another challenge. During winter, from the month of July, our internet connection had a problem, and we were totally disconnected from this part of the world, as if we were not on this planet but on some other planet of our solar system! I had to handle one life-threatening medical emergency. One member developed high blood pressure, generalised body oedema, and pallor during the winter. He deteriorated slowly and developed breathing difficulty, irregular pulse and spells of unconsciousness. I was handling this emergency in space and that too all alone! With the great help from Government of India, successful medical evacuation was carried out by me on the first flight that reached Antarctica after winter. He was admitted in the intensive care unit of Cape Town hospital, investigated and a diagnosis of 'end stage renal failure' was made. He was treated successfully.

5) You could withstand the tough expedition to Antarctica. Do you think all of us can go and stay there for at least a day or two? What qualities do you think are needed to stay there?

All can go to Antarctica! As per the international treaty of 1959, there is no permission for any permanent human settlements there. Hence, to visit and stay there for a day or two, we need to stay in a research station and for this, we need to be a part of an expedition team of some country which has a research base in Antarctica. Strict environmental norms are in place for every station regarding waste disposal and water treatment.

6) As a woman, did you encounter any unique problems during your stay in Antarctica? Nevertheless, did being a woman help you during your stay?

Not many women had done wintering in 'Maitri'. Here, till then there were only male urinals and no separate urinals for women.

In Antarctica, during field work the scientists carry and use a 'pee bottle' to collect urine and discard it in the male urinal after returning to the research base. I used a 'pee bottle' there till the month of August. During my stay in 'Maitri', a urinal for women was constructed for the first time and I inaugurated it on the 16th of August. Now, the Maitri research base has a separate urinal for women.

My team was my family for a year. They were very cooperative and all used to care for me. We had galley duties, night duties where we had to go out of the station during winter, polar night and check the generators every hour (which were the lifelines) ---I insisted that my team members should not give me any concessions in duties because I was a woman member. We used to help each other, and I used to do equal share of my work as any male member. I was the only woman not only in 'Maitri', but also in the nearby Russian research base Novo- the only neighbour of 'Maitri'- 5 km away.

I think being a woman did not help me in any way...I feel a male or a female expedition member can carry out tasks equally well in Antarctica— On the contrary, being an only woman member was challenging at times but with the help of my teammates I had a great expedition.

7) You have a degree in Psychology in addition to Anaesthesiology. Why did you do the course in Psychology? Did this help you during your Antarctica trip and in your everyday life?

I had always been working for a social cause along with my professional work. I always liked working with underprivileged school children and teenagers. I pursued a few short courses in counselling to understand them better. This further led me to study and acquire a master's degree Clinical Psychology (distant education). This has helped me largely in my personal life, interacting with our patients and as a human being too! This helped me in Antarctica during the winter to handle the winter effects often seen among the team members (due to polar night, there is change in the circadian rhythm,

anorexia, insomnia, mood swings, anxiety, depression, T3 syndrome). I could do crisis management better, especially when I had to handle a life-threatening medical emergency during winter and carry out medical evacuation of that member patient on the first flight that reached Antarctica after eight long winter months!

8) If given another chance, would you travel again to Antarctica?

Definitely! There is a saying in Antarctica— Once an Antarctician, always an Antarctician!!

9) We read your article entitled 'A year on Ice: Humbling and character-building experience!' in the Journal of Anesthesia & Critical Care Case Reports published in Jan-April 2018. Why did you call it a 'humbling' and 'character-building' experience?

Antarctica has been a life-changing and character-building experience for me. Wintering in Antarctica is a spiritual experience. We experience the presence of the creator of the universe all around, of which we become a part! 3-4 months of midnight sun; equally long is the polar night, Aurora Australis putting the skies ablaze, sun, moon, stars moving parallel to the horizon-----all this is stunning and beyond imagination! This continent is breathtakingly beautiful. The sun does not rise in the east always and set in the west either! Vast dynamic forces of nature like blizzards humble you!

About 150 million years ago, Australia, India, South America, Antarctica and Africa were one land mass known as 'Gondwana' After the continental drift, Antarctica got surrounded by the Southern Ocean which freezes during winter making the continent double its size! A continent which was separated 30 million years ago, no humans could reach here till the 19th century! As a result, humans did not get any chance to interfere with its nature. Without humans, how our beautiful mother earth would be! This is exemplified by 'Antarctica', the highest, driest, coldest and windiest continent!

98% of it is covered with snow and 70% of our planet's fresh water is locked here in ice.

10) Madam, what is your opinion on current climate change and global warming?

I have experienced the serious effects of climate change and global warming in Antarctica. The year 2017, that I spent on ice was one of the hottest years! Normal summer temperatures in Antarctica are -5 to -10 degree Celsius. That year it rose to +10 degree Celsius! Our flight couldn't be supported and landed on an icy air-strip where it usually lands- due to widespread melting. It had to be diverted further towards the south. Though blizzards in Antarctica last for weeks together, I didn't see a blizzard lasting for more than a day! After winter, the arrival of South Polar Skua- an Antarctic bird marks the beginning of the summer in Antarctica. Scientists of different nations in the various research bases, mark this day. In 2017, Skua returned early to Antarctica after winter.... Summer arrived early in Antarctica! In the last 25 years, the population of penguins has gone down by 50% and seals are struck blind due to ultra-violet rays! Ocean levels are rising, monsoon patterns are changing, temperatures are touching a new high. Our planet is on edge. We must save our beautiful planet.

11) What do you think is currently the major environmental issue?

The major environmental issue is the harmful effects of human activities on the environment like pollution, climate change, global warming. Today, the major environmental issue is the rising temperature of our planet and climate change. Over the last one century due to industrialisation and burning of fossil fuels, our planet's temperature has risen by 1 degree Celsius. Unprecedented heat waves have been observed this year all over the world. There is a rise in environmental temperatures due to greenhouse gases- warming leading to climate change.

12) What do you think should be done for the environment and our well-being?

We must protect our environment. Use of renewable energy will help to stop using fossil fuels. Waste management and water treatment to prevent surface water pollution, avoiding deforestation and planting trees, prevention of biodiversity loss, and reducing carbon footprint at every individual level every day will go a long way to protect our environment. Reduce, Reuse, Repair and Recycle should be the mantra of our well-being!

13) What is your opinion on the current state of our country's environment in relation to sustainable economy?

Our country needs to adopt a comprehensive approach to balancing economic growth with environmental considerations. For us to ensure long-term growth, we must adopt sustainable practices, like energy transition, sustainability mobility, eco-friendly agriculture, sustainable finance and innovative technology.

14) What is your message to the young anaesthesiologists of today?

Anaesthesiologists can contribute largely to protecting the environment at a personal as well as professional level. Each one of us can make a great difference to our beautiful planet by avoiding gaseous anaesthetic agents, avoiding the use of plastics, doing waste management and using filters during patient care and management, in the operation theatres and ICUs.

Thank you, madam, for sharing with us your valuable thoughts and giving us tips on important issues. You are truly inspiring. Many, many thanks from the editorial team of VAPOUR!



Antarctica continent

Dr. Madhubala's experiences are beautifully depicted in the documentary film written and produced by her. It is available at <https://youtu.be/177O6XkA58U?si=wg7p6kFfqFwzcXfN>. The film has won several prestigious national & international awards.



The last sunset-The polar night begins



Indian research base 'Maitri' during polar night

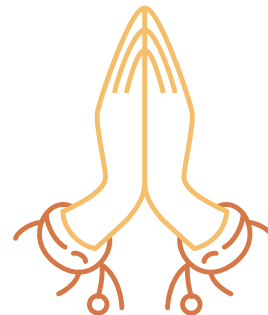


Aurora Australis or Southern lights



Vertical moon crescent on the eve of Ramzan Eid

INVITATION TO CONTRIBUTE



‘Vapour’, the official newsletter of the Indian Society of Anaesthesiologists invites contribution of articles originally written by ISA members (Life and associate). The articles can be in the form of interesting case reports for discussion, articles on topics of current clinical relevance, photo-essays, articles on medicolegal /health/ financial/extracurricular issues of interest to the anaesthesiologists. Original literary works such as poems, funny cartoons or paintings on topics of anaesthesia are also welcome. **Information about extraordinary achievements /experiences of ISA members, book publication can be sent.**

The articles should be brief and written in font Times New Roman 12-14 size and presented in Microsoft office word document (rtf/doc files). Plagiarism and violation of copyrights should be strictly avoided. The articles should be e-mailed to isanhqvapour@yahoo.com with a covering letter addressed to the Honorary Secretary, ISA National.

Dr. Sukhminder Jit Singh Bajwa

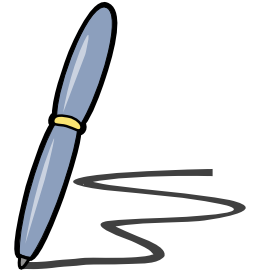
Hon. Secretary, ISA National

Editor-in-Chief

VAPOUR

(The official newsletter of the ISA National)

INVITATION TO CONTRIBUTE TO NEW SECTION ON 'INNOVATIONS'



A new section named 'Innovations' is being started in 'VAPOUR', the official Newsletter of the ISA National. ISA members can send information about their innovations (Technical/theoretical) related to anaesthesia and clinical practice neatly typed in Microsoft Office Word Format in Times New Roman Font (size 11-12). Appropriate pictures of the innovation can also be sent. The articles can be mailed to isanhqvapour@yahoo.com

Dr. Sukhminder Jit Singh Bajwa
Hon. Secretary, ISA National
Editor-in-Chief
VAPOUR
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